COHESION, COHERENCE AND SOUND CHANGE

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Abstract: Sound change in the form of assimilation and elision, is considered as an effect of he application of the notions of cohesion, coherence and relevance. The object of the analyses are vowels,consonants, length and stress. The place of articulation of vowels and consonants is related to cohesion, and their manner of articulation to coherence. Relevance is linked to prominence. It is analysed the type of sounds that can be joint because of cohesion, coherence, and the means to obtain relevance, as well as the restrictions imposed on the type of change provided.

Different answers have been provided for the question **why change** ?, trying to support the presence or absence of sense in linguistic change. Its comparison with the biological changes can supply the ground for the understanding of change as a mechanical or evolutionary process. Roman Jacobson and Nikolaj Trubetzkoy from the Prague Linguistic Circle, are in pro of one of the two possibilities. While Jacobson (1983) sustains that changes are fortuitous, Trubetzkoy (1975) puts forward that the sense of change has to be discovered.For Saussure (1960) sound changes are fortuitous and blind, while Coseriu (1973) admits that the development of language is a constant systematization. This concept eliminates the border line between past and present, and it is assumed that language has to change to remain the same. Linguistic change is a way to make valid the notion of coherence of linguistic relations, and it is markedness that provides the explicit means of expressing coherence, as it is shown in the change of **f** for **v**, when we deal with a noun (safe) or with a verb (save).Lass's possitivism (1980) leads him to point at the fact that "we haven't a clue of what (if anything) causes or constrains linguistic change". On the other hand Peirce's phylosophy of rational causation (1965-66) is based on the axiom that if

there is a cause has to be a goal or end.Social and psychological motivations are involved in linguistic change, because grammars are simultaneously social and psychological structures. Due to the dual character of the nature of languages, linguistic change is a mental phenomenon, at the same time that the use of language involves a social purpose. Some sociolinguistic variables could be the result of connected speech processes (CSPs), as it was suggested by Labov (1980) in the case of the final **t, d** deletion.The notion of movement implied in a process of change is even more salient when connected speech processes are involved. The phonetic variations that take place in these processes are mainly the result of the dynamics of the vocal tract. Time is connected with movement, because an increase in movement brings about a decrease in time in the linguistic performance.The notion of space is also envisaged by connected speech processes; the presence of a sound is filling a space in the speech chain, and its omission results in the absence of such a space. In CSPs sound change is due to a variation in a space filler, with the implication of similarity or difference from sounds that are close to each other. It can be said that sound change is ruled by the principle of permutation when the space is filled by a sound already existing, or by the principle of addition, if the filler of the space is a new sound. The principle of omission is operating when there is no substitution involved.

The dynamic principle of sound change can be related to a movement of anticipation of a sound in connection with the one close to it, that is proper of the English language, or a movement of retraction, characteristic of French and Italian. The articulatory movement can go backwards or forwards in the vocal tract, and the direction of the change could be the result of a movement from right to left or from left to right, inside a word or at a word boundaries.

We are interested in detecting sound change in connected speech processes of vowel reduction, assimilation and elision, affecting a segmental component, vowels and consonants, and a suprasegmental component, length and stress.

The reason for a phonological process has to be found not in the means but in the motivation. The need is not logical but pragmatical, because there is a want for increasing movement and decreasing time in oral communication. Phonological processes are expressed in phonetic terms, but it is the result of a way of using the language. Under the perceptive aspect the increase in movement and the shortening of time, does not affect the understanding of a message. Perception can be affected by the phonological knowledge of the language perceived.

There are limits to the phonological processes, and even within the theory of generative phonology, the notion of natural class imposes restraints on what may or may not occur, concerning changes. In the productive basis the limits are given by the restrictions imposed on the use of the articulators, although it does not answer the question why some gestures are allowed and forbidden in different languages, apart from the consideration that every language has its own scale of difficulties and a particular evolutionary path that confers a different meaning to the notion of easiness. Processes of change are oriented in certain directions, which seem to be implicit in the phonetic systems and morphologies of the languages.

In connection with the mental organization of speech, it is assumed that the motor plan for a particular segment remains the same regardless of varying phonetic and timing conditions; there is no change in the motor plan for the target segment. The changes in gesture movements in different contexts are originated from local interactions between context and target gestures.

Sounds are governed by the principle of association, inside a word or at a word boundaries. As a result of such association coarticulation takes place. Coarticulation can be understood as a ombination of an anticipation of features to what stable gestures are added.The principle of association is based on similarity in place, manner of articulation and voicing. Context is themeans to make a change possible; when the change is discontextualized is made systematic, as it is the case with the lexemes **picture** and **sugar.**

The use of language that conveys an inverse relation between movement and time, is dependable on a context, related to a definite type of situation. Apart from the existence of a phonetic and a pragmatic context, the notions of 'cohesion' and 'coherence' can be applied to sound change in a phonological process, as the result of a way of using the language. Perception is maintained if coherence and cohesion in the production of sounds are kept, and there is a share knowledge of the pragmatic context. Relevance is based on the two notions of

cohesion and coherence.

Lessening in length and stress in vowel reduction needs to be neutralized by the use of sounds that are more relevant, regarding a higher degree of sonority [ə] or of pitch [ɪ]. This transformation entitles the features [+ phoneme], [+ grammatical word], [+ lexical word], [–length], [– stress]; [aɪ] > [ə] **He did it for a second time** hɪː 'dɪd ɪt fər ə 'sekənd tɪm. Among consonantal sounds obstruent consonants are more relevant sounds than sonorant consonants, in connection with the noise provided, and they are more likely to be influential in sound change in the connected speech process of phonemic assimilation: [s] + [ʃ] > [ʃ] **this shop** ðɪs ʃɒp . The change is directional in the sense that there is a movement from right to left. On an intentional ground the obstruent consonant can be the agent of the change, or the sound that receives the effect of the change. In processes of elision an obstruent consonant can be the agent that causes the disappearance of a vowel sound in a word context: **police** pliːs .

The relation between sounds has to be sustained by their cohesion and coherence. When the notion of cohesion is involved in sound change, it is related to the place of articulation in vowels (front, central, back) and consonants. Three main phenomena are considered: **palatalization, centralization** and **velarization.** These three processes are also a means to obtain coherence, when a change in vowel quality is involved. Coherence is related to the manner of articulation in vowels (close, mid, open) and consonants. The movement implied in these types of changes is a one way direction in palatalization and velarization, and a two way direction in centralization. The changes are mainly phonemic although they can also be allophonic. The segments affected by the changes are vowels and consonants, and the type of words involved are mainly grammatical words, in the case of vowels, and lexical words, with regard consonants.

Palatalization concerns vowels and consonants. The change can be phonemic in connected speech processes of vowel reduction and assimilation, and it can be related to grammatical and lexical words. Palatalization with a change in vowel quality can be the result of the levelling of a diphthong: **by** baɪ > bɪ ; **saint** seɪnt > sɪnt, sɪn , The allophonic change involved in palatalization can affect lexical words in isolation, and it can be related to the phonetic context provided by consonant (obstruent) + vowel, where the leading sound is the vowel that exerts an influence on an obstruent consonant: **kit** kɪt . The direction of the movement is from right to left, but in **king** kɪŋ is from left to right.

At a word boundaries, the agent of palatalization can be the approximant [j] in the context of vowel + consonant (approximant) in the form of [ə] + [j] > [ɪ] : **What are you doing** ? 'wɒt i ju 'duɪŋ ; the nature of the change is phonemic, and is directed from right to left. The phenomenon of palatalization can be a two directional movement, due to the coalescence of two consonantal sounds: [s] + [j] > [ʃ] + [j] ([j] can be omitted) **in case you forget** ɪn 'keɪʃ ju fə'get .

Centralization affects vowels in the process of vowel reduction, and is concerned with a change in vowel quality towards a central location , parting from a front or back position; **and** aend > ənd ; **should** ʃud > ʃəd . The change can imply a lack of directional movement in the horizontal axis: **them** ðem > ðəm

Velarization in connected speech processes, as a means to obtain cohesion and coherence, can occur in a context of vowel + consonant (approximant), with a change in vowel quality that obeys the principle of permutation: [ə] + [w] > [u] + [w] : **go away** 'gəu u'wei; the change is directed from right to left, and the articulatory movement goes to a back and closer articulation [ə] > [u].

At a word level velarization has an alloponic character occurring in the context of consonant (obstruent) + vowel, with the vowel as a leading segment; the movement is in the direction from right to left: **could** kud .

Cohesion occurs at a word level, when an alveolar fricative consonant, with the exception of [s z] is assimilated to a following dental consonant, as a result of dentalization: **eighth** eɪtθ. The change is allophonic and responds to the principle of neutralization. The direction of the change goes from right to left.

Labialization, as a change of an alveolar plosive consonant to a more advanced articulation, is a

means to achieve cohesion, because of its assimilation to a following labial consonant at a word boundaries; the change is phonemic and is conformed to the principle of permutation: ⌈ dˆ⌉ + ⌈m⌉ > ⌈ b⌉ + ⌈mˆ⌉: **good morning** gub mɔːnɪŋ ; it is a one way movement that goes from right to left.

Coherence in sounds, that is related to voicing, nasalization and the manner of articulation in vowels and consonants, is concerned with the position of the vocal cords, the movement of the soft palate, the degree of pitch or sonority, and the amount of noise provided by the closure of the articulators located in the vocal tract.

Coherence can be related to sounds that have the features ⌈+ obstruent⌉ and ⌈+ approximant⌉; ⌈+ voice⌉ and ⌈– voice⌉ (voicing); ⌈+ oral⌉ and ⌈ – oral⌉ (nasalization). Voicing has an allophonic and phonemic character, but nasalization has an allophonic character. Coherence, in a word context, can be obtained by means of an alteration in the state of the glottis. The agent of the change can be a vowel exerting its influence on a consonant, in the combination of vowel + consonant (obstruent) + vowel: **behind** bɪˈfiaɪnd. It is a two way directional movement, from right to left and left to right, as a result of a process of neutralization. An alteration in voice can affect a vowel by means of an obstruent consonant: **tomato** təˈmaːtə u, in a one way directional movement from left to right, following the principle of neutralization. Devoicing of an obstruent consonant can occur under the influence of another obstruent in a one way directional movement from right to left: **newspaper** ˈnjuːspeɪpə . The feature ⌈ + voice⌉ is the most current component of a consonant assimilated to another consonant, and in the assimilation of a consonant to a vowel the most usual feature is ⌈– voice⌉. If stress is a suprasegmental feature that conveys relevance to sounds in a syllable structure, it can be stated that in a process of assimilation the component ⌈ + voice⌉ can be applied to the initial or final sound of a stressed syllable in a word context, and the component ⌈– voice⌉ can be linked to the final or the initial sound of a stressed syllable, and to the syllabic sound of a dealing syllable. At a word boundaries devoicing occurs on the final sound of a stressed syllable in the first word, according to the phonetic contexts analysed.

Nasalization is another way to achieve coherence among speech sounds. The change takes place at a word level, obeying the principle of neutralization; the sound neutralized can be a vowel: **man** maen , or a consonant: **emphatic** ɪmˈfaetik . The direction of the influential effect goes from left to right, but also from right to left: **helmet** ˈhelmɪt .

Coherence in vowels applies to their manner of articulation (close, mid, open) The change is phonemic in vowel reduction (grammatical words), and in lexical words, implying an articulatory movement, that can go downwards : **could** kud, kə d , upwards: **some** s ʌ m, s ə m or it can be maintained in the same direction: **sir** s ɜː , sə .

A change in the manner of articulation of a consonant occurs at a word boundaries by means of coherence. It obeys the principle of addition, when as the effect of palatalization a plosive turns into an affricate consonant; the two sounds coalesce together following a combinatory principle ⌈d ⌉ + ⌈j ⌉ > ⌈dʒ⌉ : **Did you go to Paris ?** ˈdɪdʒuː gəu tə ˈpaens. The change also requires cohesion, because of a movement in the place of articulation from alveolar to palato-alveolar.

If assimilation is ruled by the principle of permutation and addition, elision is governed by the principle of omission. As a connected speech process elision has a phonemic character, and can affect vowels and consonants in grammatical and lexical words, within a word, and at a word boundaries.

Vowels are often lost . The vowel that is most often omitted in vowel reduction, corresponds to the segment ⌈ ae ⌉ in a strong pronunciation: **John's here and Jack's there** ˈdʒɒnz ˈhɪə ənd ˈdʒaeks ˈðeə .The consonant most often elided is ⌈h⌉ :**he had done it** hiː əd ˈdʌn it. A common feature is the absence of stress, establising coherence by means of the combination of stressed and unstressed syllables, as a way of keeping rhythm . Within a lexical word the vowel omitted can be ⌈ə⌉ or ⌈ ɪ ⌉ in a pre-tonic position, preceded by an obstruent consonant, as a way of priority for a compensation in noise : **they seem to believe it** ðeɪ ˈsiːm tə ˈbliːv ɪt. In a post-tonic position an approximant type (nasal) can favour the elision of a vowel when it is followed by another approximant: **she has gone with her family** ʃiː əz ˈgɒn wɪð hə ˈfaemlɪ. A change in syllabification is obtained, on a quantitative basis.The connection

of three obstruents within a word is neutralized with the omission of the middle consonant: **she acts with care** ʃiː ˈaeks wɪ ð ˈke ə.

At a word boundaries coherence is provided by avoiding three obstruents together: **he tried his left shoe** hiː ˈtraɪd ɪz ˈlef ˈʃuː, or two obstruents before an approximant type (nasal): **it was their first night there** ɪt wɒz ðe ə ˈfʒː s ˈnaɪt ˈðe ə.

An obstruent consonant is omitted, for the sake of coherence, between two approximant types (nasals): **he is a blind man** hiː iz ə ˈblaɪn ˈmaen.

The movement of the change might be a one way direction (believe) or a two way direction (family).

In connected speech processes the change in the length of sounds has a phonemic or allophonic character, and it follows the principle of neutralization, as a means of establishing coherence: **he** hiː, hɪ; **seat** siːt , **seed** siːd. The phonological component in the phenomena of palatalization and centralization is ㄴ− length ㄱ, when vowels are involved in processes of vowel reduction and assimilation.

Concerning stress , the prevailing component is ㄴ− stress ㄱ in processes of centralization and palatalization in vowel reduction, in the case of grammatical words. In other processes of phonemic assimilation the components are ㄴ+ stress ㄱ or ㄴ− stress ㄱ, if voicing, palatalization and velarization are the cases. The alveolar assimilation has the component ㄴ+ stress ㄱ and the assimilation of a vowel to a following consonant ㄴ− stress ㄱ.

In the connected speech process of elision the phonological component is ㄴ+ stress ㄱ or ㄴ− stress ㄱ in a word context, and ㄴ+ stress ㄱ at a word boundaries. Concerning the syllable structure, the sound elided, in a word context, can be in the final position of a stressed, or an unstressed syllable (grammatical word), and it can be the syllabic sound of a leading syllable or of a first trailing syllable. At a word boundaries elision can take place on the final sound of a stressed syllable in the first word.

The kind of discourse in which the phenomena of combination, reduction and omission of sounds are involved, depends on the sort of speech between people that have the same linguistic background, and are involved in the same type of situation. The frequency of the use of such processes is linked to the type of situation as well.

Summarizing, it can be stated that the means of sound change is to convey cohesion and coherence in a phonological context, based on the notion of relevance; the means can be associated with the cause of it, because it leads to a definite goal. The local interaction between context and target gestures does not interfere in speech perception, because no extra mental efford is needed for the interpretation of a linguistic message. The role of relevance for an easy interpretation is provided by the presence of obstruent and approximant consonants, as the agents that favour a change in connected speech processes. Following the principle of permutation and addition, obstruent consonants and the approximants ㄴ m j ㄱ are the leading sounds that procure phonemic assimilation at a word boundaries. It is also the case with allophonic assimilation in a word context, following the principle of neutralization, although a vowel can also be the agent of the change, when its object is an obstruent consonant. At a word boundaries elision can be favoured by an obstruent consonant and a nasal approximant type ㄸ n ㄱ, in the combination of three obstruents, two obstruents plus a nasal approximant, or a nasal approximant plus an obstruent, followed by another nasal approximant . The scale from a closer to an opener articulation is provided by obstruents, approximants and vowel sounds.

There is a productive and perceptive factor in attaining cohesion, related to a surface appreciaton of sound change. In the case of consonants, the productive factor is favoured by the proximity of the articulators, and because the effect of relevance is kept, no extra effort is needed in the perceptive stage. In vowel reduction the movement is most often from left or right to a central position, that is most relevant, as a balance for the decrease in stress.

There is also a productive and perceptive factor in coherence, connected with the underlined consideration of sound change. When coherence refers to the manner of articulation in vowels in the process of vowel reduction, it is usual to move to an opener, more sonorant articulation, or to a closer one with a higher degree of pitch, in agreement with the principle of permutation. Consequently, relevance in vowels is based on a higher degree of sonority or of pitch, providing the clue for avoiding an extra efford in a perceptive level. Relevance in consonants

can be obtained because of the effect of neutralization, when an obstruent and an approximant come close together in a context at a word boundaries, giving birth to another obstruent consonant, obeying the principle of addition.

Coherence can also be obtained because of a change in the state of the glottis, favoured by an obstruent consonant, or a vowel when as a result of neutralization an obstruent consonant happens to be between two vowels. The same result is attained by a change in the position of the soft palate, due to neutralization as well, being the agent of the change a nasal approximant type.

Concerning the connection between voicing and the suprasegmental feature of stress, the features $[+ voice]$ and $[- voice]$ can be associated to $[+ stress]$ or to $[- stress]$ in phonemic assimilation and elision. In relation to the location of the changes in the syllable, voicing occurs in the onset, nucleus and termination.

The agents of change in connected speech processes are likely to be obstruents and approximants, and the objects are vowels, in vowel reduction, obstruents and a nasal approximant type $[n]$ in assimilation, and obstruents in elision. The changes providing cohesion and coherence in the speech chain are possible when a higher degree of sonority, of pitch and of noise is kept to supply relevance, so that the listener wouldn't be in need of an extra efford in decoding the perceived message, when a connected speech process is involved.

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