PP-657-673
P-ISSN: 2716-8093 E-ISSN: 2716-8212

A Non-linear Analysis of Phonological Processes in Algerian Dialects: Case Study of the Oranian Dialect

Une Analyse Non Linéaire Des Processus Phonologiques Dans Les Dialectes Algériens : Etude De Cas du Dialecte Oranais

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Received: 01/03/2025, **Accepted:** 18/06/2025, **Published:** 18/11/2025

Abstract:

This study is an attempt to identify different phonological processes that are manifested in the Oran dialect. The study adopts non-linear approaches: auto-segmental, feature geometry, and X-skeleton analysis. This approach allows us to explore the complexities of phonological structures and articulations that cannot be adequately addressed by a simple linear string of segments. Additionally, it extends beyond just the place and manner of articulation, emphasizing other prosodic features such as rhythm, stress, and tone. The data for the analysis was collected from various settings in the city of Oran. Participants were audio-recorded having natural discussions about daily life topics and scenarios. Findings reveal that the Oranian dialect displays numerous assimilatory processes like nasal homorganic assimilation, voicing assimilation, labialization, and vowel deletion. Results also show the manifestation of some unnatural phonological processes, namely metathesis.

Keywords: assimilation-dialect-nonlinear-phonological processes-Oran.

Résumé :
Cette étude est une tentative d'identification des différents processus phonologiques qui se manifestent dans le dialecte oranais. L'étude adopte trois approches non linéaires : analyse auto-segmentaire, géométrie des caractéristiques, et analyse du squelette X. Cette approche nous permet d'explorer les complexités des structures et articulations phonologiques qui ne peuvent pas être abordées de manière adéquate par une simple chaîne linéaire de segments. De plus, il s'étend au-delà du simple lieu et du mode d'articulation, en mettant l'accent sur d'autres caractéristiques prosodiques telles que le rythme, l'accent et le ton. Les données pour l'analyse ont été collectées dans différents contextes de la ville d'Oran. Les participants ont été enregistrés en train d'avoir des discussions naturelles sur des sujets et des scénarios de la vie quotidienne. Les résultats révèlent que le dialecte Oranais présente de nombreux processus d'assimilation tels que l'assimilation homorganique nasale, l'assimilation de la voix, la labialisation et la suppression des voyelles. Les résultats montrent également la manifestation de certains processus phonologiques non naturels, à savoir la métathèse.

Mots- clés : assimilation-dialecte-non linéaires-processus phonologiques-Oran.

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Introduction

Schane (1973) argues that when morphemes are combined to form words, the segments of neighboring morphemes become juxtaposed and sometimes change… All such changes will be called phonological processes, which show how sounds change during their vocal communication. Accordingly, Donegan (3: 2002) states that these processes are salient because they try to sort out the articulatory obstacles. Thus, these phonological processes are used to make the production of complex utterances easier and enhance human speech. Yet, it is important to note that the way the sounds are changed to be easily uttered is not a random operation; it involves systematic logical operations, universal systematic rules, and specific environments that differ from one language to another. Although this study tries to detect different phonological processes in the Oranian dialect, it shows more interest in the assimilatory processes.

The phenomenon where segments and morphemes are influenced or juxtaposed when they co-occur in the same environment is referred to as assimilation. Assimilation is the most natural and common phonological process of a sound change occurring in all languages. Katamba (107: 1989) defined assimilation as the modification of a sound to make it more similar to another sound in its surroundings, resulting in a smoother, more effortless, and more economical transition from one sound into another. Accordingly, McMahon (4: 2002) stated that assimilation is always present in everyday human speech; that is, humans, in general, use it in their casual speech to facilitate speaking. In short, assimilatory processes are said to change the feature values of segments.

Several phonological theories have investigated phonological assimilation processes. In the phonological theory of The Sound Pattern of English SPE (Chomsky and Halle, 1968), the phonological assimilation processes are described linearly based on copying the feature and rewriting rules. That is, one segment changes its feature values to become more similar to a nearby segment. However, several problems were left unsolved, and the room for criticism was opened. One of the major problems is the description of the commonplace phonological processes; some researchers argued that the linear format was viewed as inadequate to represent the essential characteristics of commonplace processes such as nasal homorganic assimilation.

As a reaction, Goldsmith (1976) has developed a new framework known as autosegmental or non-linear phonology**.** This framework was originally used to describe tonal languages (mainly African languages). Accordingly, Clements (1976) developed a theory, which involved vowel harmony and nasal harmony. Then, John McCarthy (1979) extended autosegmental to the verbal derivation of Classical Arabic, where he formalized a theory known as the prosodic theory based on the idea that consonants and vowels of Arabic words belong to separate morphologically defined tiers.

Moreover, this model creates a hierarchical order of linguistic elements rather than a linear one; segments are autonomous or independent from each other, and phonological processes are described in terms of spreading features rather than copying. In addition, the hierarchical representations are known as tiers; the timing units are referred to as tier timing/quantity tier (the CV-tier or the X-tier), whereas the quality units are known as the melody tier (the segmental tier which contains the feature specification of the segment). The association between the X-tier and the segmental tier is subject to two main principles: "Well Formedness Condition" and "Obligatory Contour Principle, OCP." The former has three sub-principles, which are as follows: First, all vowels

are associated with at least one tone; all tones are associated with at least one vowel. Second, association lines do not cross. Finally, the Association Convention states that only the rightmost member of a tier can be associated with more than one member of another tier. The latter states that adjacent identical segments are not permitted at the melodic level.

The importance of the approach and its benefits in dealing with major phonological issues has led many researchers to extend the multi-tiered representations to feature configurations. The representation of features in this approach involves organizing them in terms of a tree structure; this kind of representation is called feature geometry. This tree structure consists of a root node, which is a holding position containing major class features and other remaining nodes that are all associated with this root. Precisely, a supralaryngeal node (displays manner and place of articulation features) and a laryngeal node (displays voicing, constricted and spread glottis features). All these nodes together give the specifications for the segments.

Arabic is the official language of all Arab countries around the world. Its rich vocabulary made it one of the most prestigious languages ever. It made people worldwide curious to learn and be in touch with such a beautiful language. Arabs, however, have several spoken regional varieties (dialects), which differ significantly from Modern Standard Arabic or Classical Arabic.

Hudson (22: 1996) defines a dialect as the variety of a given language that is characterized by a particular community for a specific area, as it differs from other varieties within the same language in different levels, mentioning vocabulary, style, and specifically, spelling and pronunciation. Pronunciation will be covered in this paper, as we investigate the occurrence of different phonological processes that are manifested in Algerian Arabic. More specifically, in the dialect used in the city of Oran in the northwest of Algeria. The city of Oran is vast, and the number of its inhabitants is relatively big. The last official census in 2018 recorded the population of Oran at 966,000. This will undoubtedly increase the level and number of linguistic variations among the speakers of this variety, depending on different factors, namely cultural, social, and educational.

The Oranian local dialect incorporates elements from different languages due to the city's multicultural history. Apart from Arabic, the native language, which is the most prevalent language, French is the second most widespread language used in the Oranian dialect. This latter is a legacy of the French colonization (1830-1962), as it remains widespread in business, education, and daily life. Moreover, due to historical ties with Spain (1509–1708), Spanish has left its mark on Oran's dialects, though its use is now minimal. Oran has also been affected by the Turks and Italians. This has influenced the city's linguistic landscape, though their presence is less manifested compared to French and Spanish. All of this multilingual tapestry can be reflected in the Oranian dialect due to the historical background and medley of cultures and civilizations we have seen hitherto.

To this end, this work aims to present a non-linear analysis of the most common phonological processes manifested in the Oranian dialect and to bridge the gap as far as phonological studies of Algerian dialects are concerned.

1- Theoretical background

Since the publication of Clements's (1985) groundbreaking paper on the geometry of phonological features, there has been a growing consensus among researchers. They claim that the features constituting the phonemes of a language are not merely a simple list. Instead, they possess

a hierarchical structure, which is typically represented in a geometric tree (see figure 1). A key argument supporting this idea is the observation that only a small fraction of the possible combinations of features, such as pairs or triplets, appear in actual phonological rules. For instance, phonological rules do not involve combinations like [-back, -continuant], [+strident, -round], or [-low, +stiff vocal folds].

The feature tree formally accounts for this by dividing the universal list of features into mutually exclusive subsets and organizing these subsets into higher-order sets. If we assume that only these structured feature sets can be referenced by phonological rules, then other sets, such as [-back, -continuant] and the examples above, are excluded from phonological consideration. Sagey (1986) examined feature sets active in various languages and demonstrated that these sets also share significant phonetic characteristics. Specifically, Sagey showed that the same articulator executes the features within the lowest sets of the tree; for example, [anterior] and [distributed] are both articulated by the tongue blade, while features like [stiff vocal folds], [slack vocal folds], [spread glottis], and [constricted glottis] are articulated by the larynx.

This innovative approach was created to address the limitations of generative phonology, especially the framework introduced by Chomsky and Halle in 1968 in their work, "*The Sound Pattern of English*" (SPE). In this model, phonological representations are viewed as linear sequences of segments, and phonological rules are applied along a single line (Spencer, 1996). However, linear representations proved inadequate for capturing the essential characteristics of common phonological processes. For instance, in English, the coronal nasal /n/ takes on the place of articulation of the following obstruent, as in "in place" → [impleis]. Yet, such a process is difficult to represent using simple linear rules. The nasal /n/ shares its place of articulation with the voiceless obstruent / p /, but linear notations fail to explain why assimilation is a phonologically natural phenomenon. This gap led to the development of new approaches that better captured the complexities of phonological processes and rules.

Autosegmental phonology, a non-linear approach first proposed by Goldsmith in the 1970s, addresses this need, particularly in the analysis of tonal languages where pitch is contrastive. Autosegmental phonology explores processes like tone, vowel harmony, and nasal harmony, treating them as independent of individual segments and capable of influencing multiple segments simultaneously. This structure is hierarchical, analyzing sounds across several autonomous levels, or "tiers." In his (1976) PhD thesis at MIT, Goldsmith introduced this framework, building on earlier ideas from linguists such as Bernard Bloch, Charles Hockett, and J. R. Firth. In autosegmental phonology, phonological representations consist of multiple linear sequences of segments, each on its tier, with co-registration of elements represented by association lines. This framework also aligns with the analysis of segments into distinctive features, with each feature appearing on exactly one tier.

The hypothesis underlying autosegmental analysis is that many phonological generalizations can be understood as the restructuring or reorganization of autosegments in a representation. Early research on African tone languages and systems of vowel and nasal harmony illustrated the value of autosegmental analysis. John McCarthy later extended this framework to analyze the derivation of words from consonantal roots in Arabic. During the first decade of the theory's development, G. N. Clements contributed significantly by applying autosegmental analysis to harmonic processes, especially vowel and nasal harmony, while McCarthy (2004) generalized the theory to address the conjugational system of classical Arabic.

Autosegmental phonology proposes several principles and constraints that govern phonological representations, processes, and rules. The Obligatory Contour Principle (OCP) suggests that certain consecutive identical features are not permissible in underlying representations, particularly in tonal languages. For example, a morpheme may not have two underlying high or low tones in sequence; one must be high and the other low. The No Crossing Constraint (NCC) stipulates that association lines cannot cross. According to Goldsmith's (1990) well-formedness constraint, any derivations where association lines cross are automatically ruled out (Spencer, 1996). However, Coleman and Local (301: 1989) argued that "*the NCC does not effectively constrain well-formed autosegmental representations and may not be a valid constraint*".

Autosegmental phonology also includes a well-formedness condition on association lines, requiring that any element on one tier that can be associated with an element on another tier must be associated and that association lines do not cross. Violations of this condition are corrected by adding or deleting the minimum number of association lines necessary to maximize conformity. The most interesting predictions of the autosegmental model stem from the automatic effects of the well-formedness condition, independent of language-specific rules. In autosegmental analysis, assimilation is a spreading process in which a responsible feature is delinked and associated with the assimilated feature, often represented by a dotted line. For example, in the assimilation of "fi[v]e" to "fi[f]th," the [-voiced] feature of the suffix [θ] spreads regressively to the consonant [v] as shown in the following graph (Kenstowicz, 151: 1994).

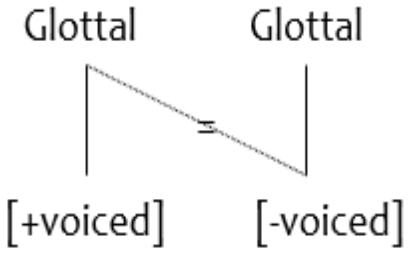


Figure 1: Example of feature geometry voicing assimilation

Moreover, assimilation is "*a **local process** in that the target and the source features have to be adjacent to each other*" (Spencer, 156: 1996). This adjacency creates what is called language conspiracies. This latter is one of the main principles that lay the foundation of autosegmental phonology. Conspiracies can be defined as phonotactic rules or restrictions (Spencer, 181: 1996). For example, epenthesis (insertion of one or more sounds in a word) interferes when there is an illegal consonant cluster; however, the syllable can have at most one onset or coda consonant.

When we encounter a sequence that cannot be syllabified, we need to apply a minimal epenthesis operation to create a legal syllable structure. These adjustments are often referred to as rules and phonotactics.

Nevertheless, in Algeria, a few works investigated the phonological system of regional dialects. For example, Benyagoub and Bouhania (2020) adopted a moraic approach to the syllable to describe and explain phenomena in prosodic phonology. They showed how helpful is the implementation of the mora in the Saoura Spoken Arabic syllables in explaining morpho-

phonological processes. First, they investigated disparity in epenthesis between words on the pattern CəCC and those on the pattern CCəC. Second, they attempted to detect and explain and the schwa deletion in a specific morphological context. The study clarified that we have to refer to both the moraic structure and the inflectional paradigm if we want to account for the difference in epenthesis between CəCC and CCəC, . Also, the work demonstrated how the assumed schwa, when inserted via an epenthesis rule, disappears in fluent speech of the Saoura spoken Arabic.

Based on what we have seen hitherto, we believe that our study will contribute to detecting and exapling the most common phonological processes in the Algerian dialects, namely that of Oran. Only by applying a non-linear analysis, one can capture the suprasegmental features and account for the spreading and assimilation. This will not only allow for an objective analysis of the dialect under scrutiny, but willmodel phonological rules more accurately.

2. Methods

2.1. Data Collection and Setting

The study aims to explore the different phonological processes manifested in the dialect of Oran. The focus will be on gathering in-depth qualitative insights to be scrutinized. This study uses audio recordings as a data collection instrument. Both Oranian male and female adults were audio-recorded while engaging in spontaneous daily life topics and scenarios. To ensure representativeness across different control variables like age, gender, and social background, we selected participants using purposive sampling. 10 males and 10 females (a total of 20) Oranian natives ranging in age from 18 to 50 years old were chosen to manage our qualitative data coding.

As far as the setting is concerned, data was collected over three (3) months from different public spaces including universities, administrations, hotels, and restaurants in the city of Oran, north west of Algeria.

2.1. Framework and Data Analysis

This study uses three non-linear phonological approaches to analyze the Oranian dialect. These approaches reject the notion of linearity and assume its failure in analyzing several phonological representations. In this study, the rules are stated in a hierarchical fashion using autosegmental analysis, feature geometry, and X-skeleton analysis.

To analyze the data, we used the Transana program. It offers integrated options for automated transcription of audio recordings. Using this program will help us sync and analyze the complex audio recordings. This digital program will also provide detailed analysis, classification, and synthesis of the data under scrutiny.

Moreover, to provide more acoustic evidence of phonological phenomena in Oranian dielect, we illustrate each phenomenon through a spectrographic analysis. This latter objectively identifies exact phonological processes and sets the data to be appropriately quantified.

3. Results and Discussion

The dialect of Oran displays five different types of phonological assimilation processes: nasal homorganic assimilation, labialization, voicing assimilation, vowel deletion, and metathesis. However, certain conditions and environments blocked some of these assimilation processes.

3.1. Nasal Assimilation

Nasal homorganic assimilation: it occurs when the/ n / sound is immediately followed by any of these obstruent / b /, / q /, and / g /. In this case, the / n / shares the same place of articulation with the sound following it. Thus, it is realized either as a bilabial [m] sound or as a velar [ŋ]. Although it requires a new point of articulation, it retains its nasal feature.

Input	Output	Gloss
/ yanbeh /	/ jambeh /	'barks'
/ yenbeʕ /	/ jembeʕ /	'sold'
/ yanqla /	/ jaŋqla /	'fry'
/ menguʃ /	/ meŋguʃ /	'earring'

Table 1: Partial assimilation of / n / sound to the following obstruent in the Oranian dialect

This kind of phonological process manifested in the dialect of Oran could be depicted using the following autosegmental analysis:

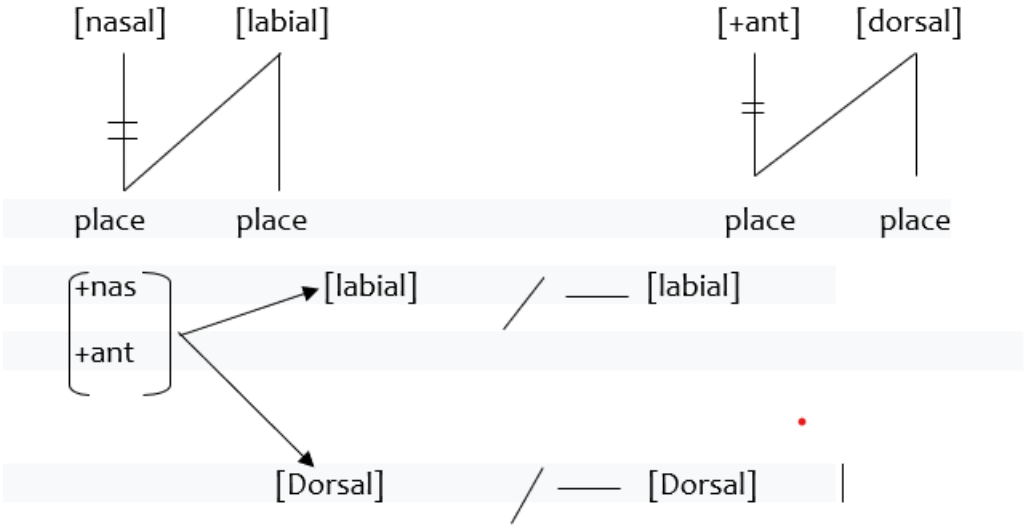


Figure 2: An autosegmental analysis of partial assimilation in the Oranian dialect



Figure 3: A spectrographic analysis of partial assimilation in the Oranian dialect

The spectrographic analysis shows how the alveolar nasal /n/ in the input (left) has a low-intensity formant and a higher frequency energy in the word /yanbeh/. However, when it partially assimilates to /m/ in the output (right), it indicates stronger energy in the low frequencies, and less high-frequency energy compared to /n/.

Total assimilation (manner of articulation): this type of assimilation occurs when the sound /n/ precedes the following sound /m/. When such operations happen, the following assimilation is manifested:

Output	Input	Gloss
/ kan##mrid /	/ kammrid /	'he was sick'
/ men##bekri /	/ memmbekri /	'a long time ago'
/ men##morak /	/ memmorak /	'after you'
/ kan##mdironji /	/ kammdironji /	'he was busy'

Table 2: Total assimilation of the/ n / sound to the following sonorant consonants

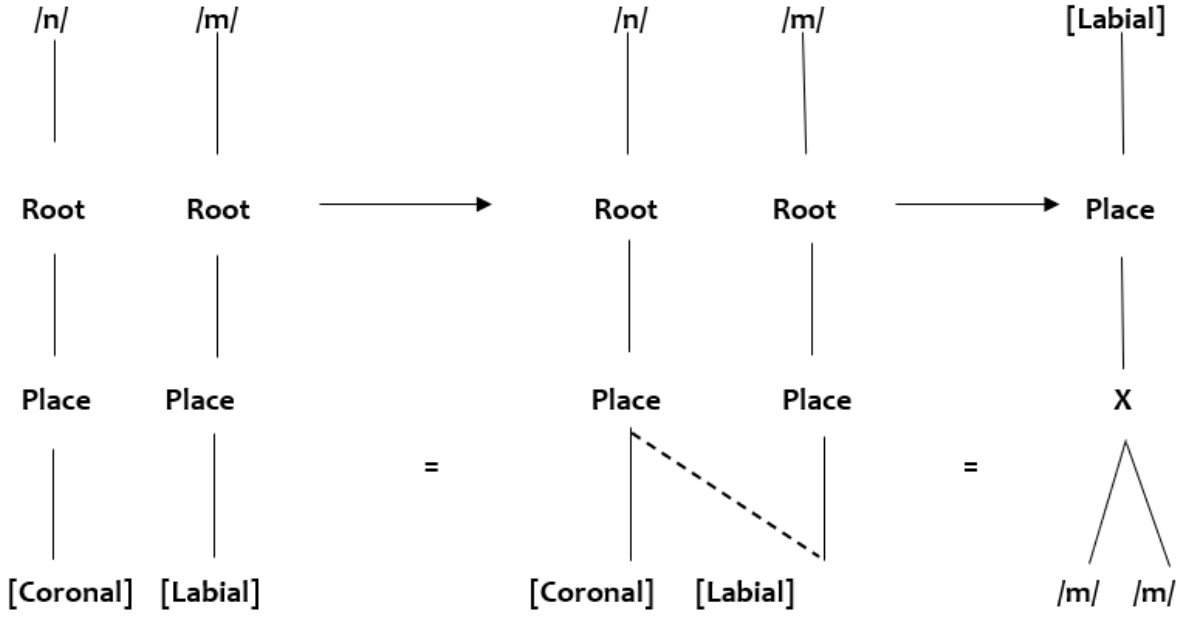


Figure 4: A feature geometry analysis of total assimilation of the/ n / sound to the following sonorant consonants in the Orani dialect

The provided examples illustrate how the nasal / n / acquires the place of articulation of the consonant that follows. The same type of assimilation was observed in the dialect of Mostaganem (Northwest of Algeria) according to Benyoucef and Mahadin (2013). However, this type of assimilation is **blocked** when the sound following the nasal / n / is pharyngeal or glottal, as in:

Input	Output	Gloss
/ nħrag /	/ yanħrag /	'burn out'
/ nʕas /	/ yanʕas /	'felt sleep'

Table 3: Blocked nasal assimilation

3.2. Labialization (Rounding)

The second process displayed in the Orani dialect is labialization. It is a secondary articulation that imposes lip rounding or lip protrusion on a primary articulation of a sound, so the speaker starts rounding his lips before articulating the consonant. But, in the Orani dialect, labialization is a result of the deletion of the sound [w] in connected rapid speech.

In this case, the [round] feature of / w / spreads regressively to the preceding segment before being deleted. This will result in a secondary articulation place feature. Consider the following data in (4):

Input	Output	Gloss
/ ʕam /	/ jʕʷum /	'he swims'
/ galet /	/ tgʷul /	'she says'
/ ʃef /	/ jʃʷuf /	'he sees'
/ nam /	/ jnʷum /	'he dreams'

Table 4: Labialization in the Orani dialect

It should be noted here that in the Orani dialect when the velar stop is labialized, it consists of a **[g] sound** as in (tgʷul) and simultaneously with a **[w]** sound which is marked as a secondary articulation where a vowel-like articulation is overlaid on the basic sound, which results in the following sound **[gʷ].**

Thus, in terms of feature geometry, the representation of the labialization process can be given the following representation:

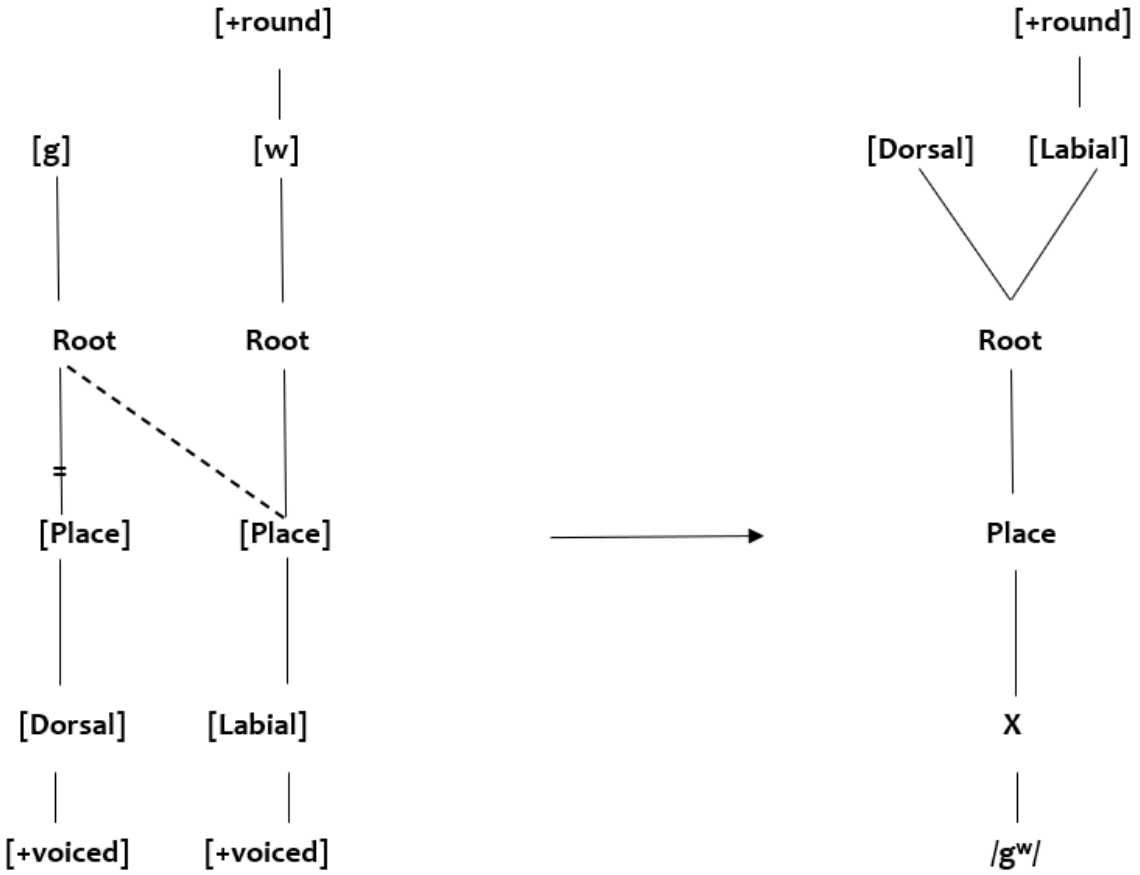


Figure 5: A feature geometry analysis of labialization in the Orani dialect

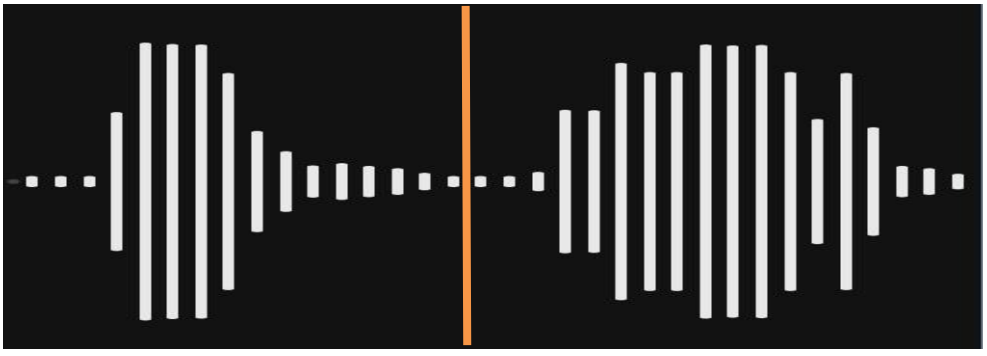


Figure 6: A spectrographic analysis of labialization in the Oranian dialect

As far as the word /jʕʷum/ is concerned, the figure above illustrates how the input (left) shows sharper, rising transitions, and clearer consonant boundary. However, the output (right) reflects a remarkable falling transitions with smoothed or rounded processes.

3.3. Voicing Assimilation

Voice is one of the common features that play a significant role in assimilation. It is common in several languages where two neighboring sounds are adjacent in their place of articulation but differ in voice. Thus, it occurs when a sound acquires the voicing feature of the adjacent sound, which could either precede or follow it. When voiced and voiceless sounds are combined, it is difficult to pronounce them together; thus, one of them can assimilate the [-voiced] or the [+voiced] feature. For instance, the voicing process in the Orani dialect deals mainly with the prefix (t), which takes the voicing feature from the initial voiced consonant of the verb stem to which it is attached. The following examples illustrate at ease the voicing assimilation in this dialect:

Input	Output	Gloss
/ tgarab /	/ dgarab /	'comes closer'
/ tzajar /	/ dzajar /	'strengthen'
/ tdaser /	/ ddaser /	'cross the line'
/ tdawi /	/ ddawi /	'to cure'

Table 5: Voicing assimilation in the Orani dialect

It is clear from the data above that the voiceless consonant (t) becomes voiced whenever followed by voiced sounds. In terms of feature geometry, the process of voicing in the Orani dialect can be given the representation in the following diagram:

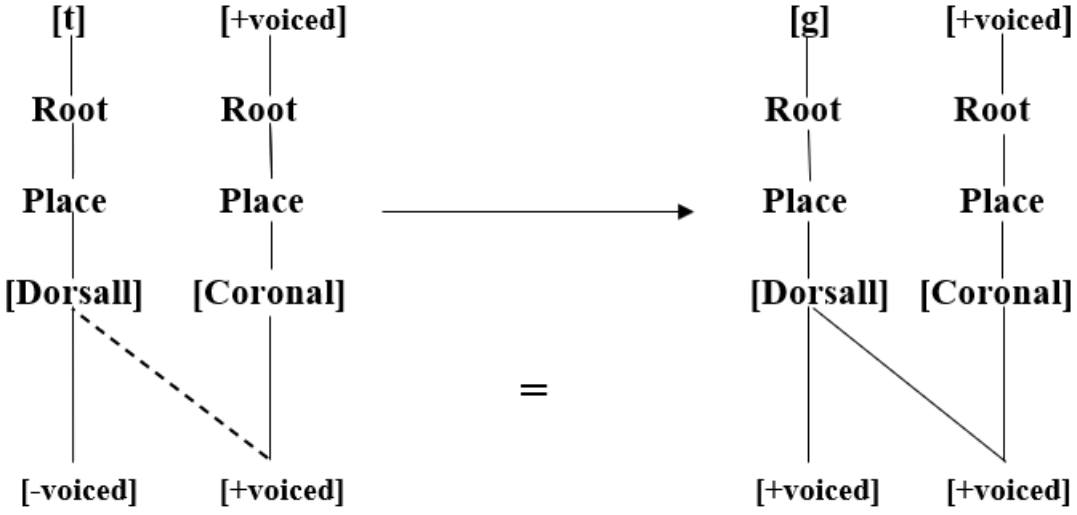


Figure 7: A feature geometry analysis of voicing assimilation in the Orani dialect

The assimilation here is described as the spread of voiced property from **/ d /** to the **/ k** /, and thus **/ k /** is now labeled **/ g /** and displays a voiced feature. This can also be better illustrated through the following spectrograph for the word /tgarab/:

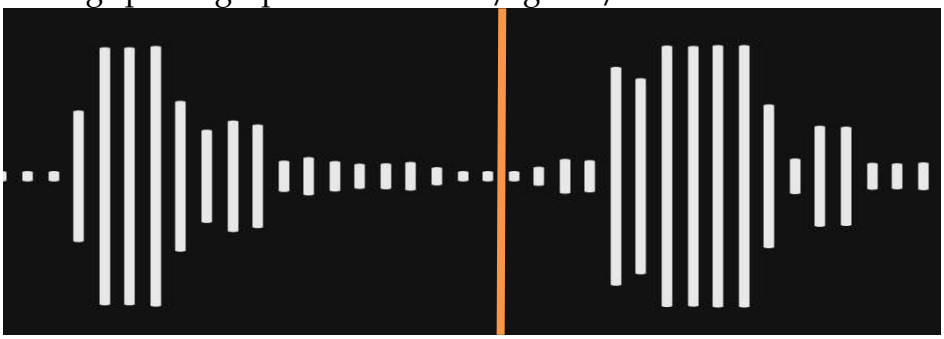


Figure 8: A spectrographic analysis of voicing assimilation in the Oranian dialect

This Analysis reveals higher duration, intensity, and frequency in the output (right) due to the spreading of the voicing features of the sound /d/.

3.4. Deletion

Orani dialect also contains different types of deletion, which is another phonological process that we will tackle in this paper. When talking about deletion, two main types arise when Orani people switch from singular to plural: apocope and syncope. The first is the process in which there is a loss of a segment in the word-final position, whereas the latter is the loss of one or more segments within a word.

3.4.1. Apocope

Input	Output	Gloss
/ tʃina /	/ tʃin /	/orange/
/ brika /	/ brik /	/laterite/
/ papiʃa /	/ papiʃ /	/beautiful girl/

Table 6: Apocope in the Orani dialect

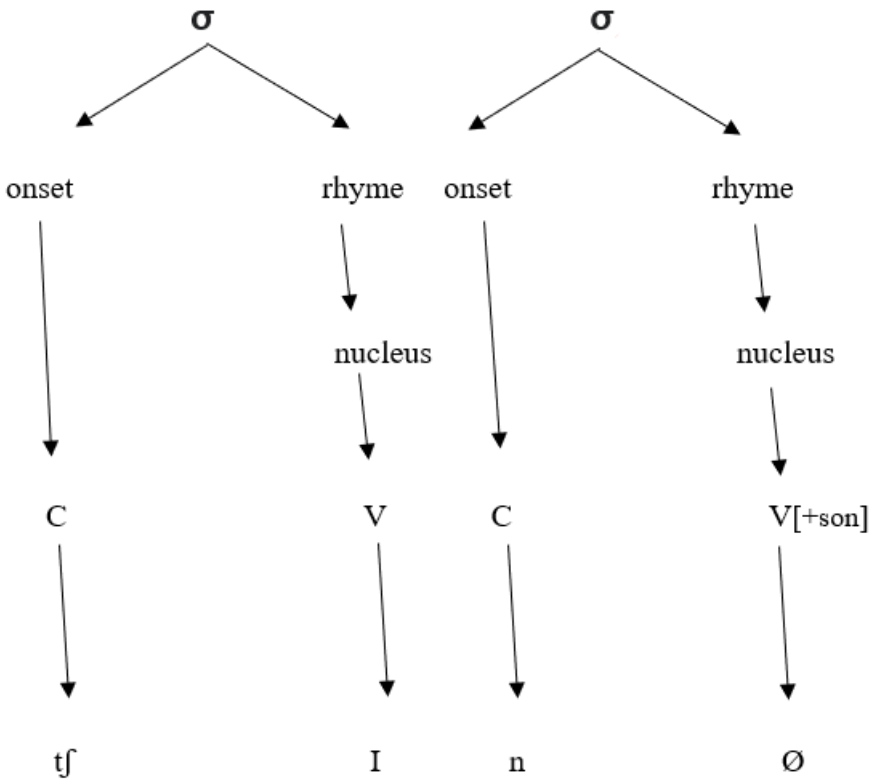


Figure 9: An X-skeleton analysis of Apocope in the Orani dialect

Using a spectrographic analysis, the figure below captures the exact difference between the input (left) and output (right) as far as the word /tʃina/ is concerned:



Figure 10: A spectrographic analysis of apocope in the Oranian dialect

The illustration shows how the frequency is remarkably reduced in the final position since the vowel [a] is deleted.

3.4.2. Syncope

Input	Output	Gloss
/ firaʃ /	/ fraʃ /	'mattress'
/ ħizam /	/ ħzam /	'belt'

/ banat /	/ bnat /	'girls'

Table 7: Syncope in the Orani dialect

Syncope is a common phonological process in the Orani dialect. It occurs mainly in unstressed syllables similar to the example illustrated above. Benyoucef and Mahadin (2013) say that syncope in northwestern Algerian cities involves the deletion of the congruent element when it occurs in an open unstressed syllable. This can be observed in details through the following spectrograph taking the word /firaʃ/as an example:



Figure 11: A spectrographic analysis of syncope in the Oranian dialect

The input (left) can be observed to have a longer frequency with a higher intensity in the middle of the syllable. The output (right), however, shows how syncope is manifested in the Oranian dialect through the deletion of the vowel /i/.

Recordings revealed the existence of two deletion processes in the same word: apocope and syncope. See the following examples:

Input	**Output**	**Gloss**
/ ʃiwaʔ /	/ ʃwa /	'grills'
/ nisaʔ /	/ nsa /	'women'
/ riyaʔ /	/ rya /	'pharisaism'
/ ghinaʔ /	/ ghna /	'singing'

Table 8: Apocope and syncope in the Orani dialect

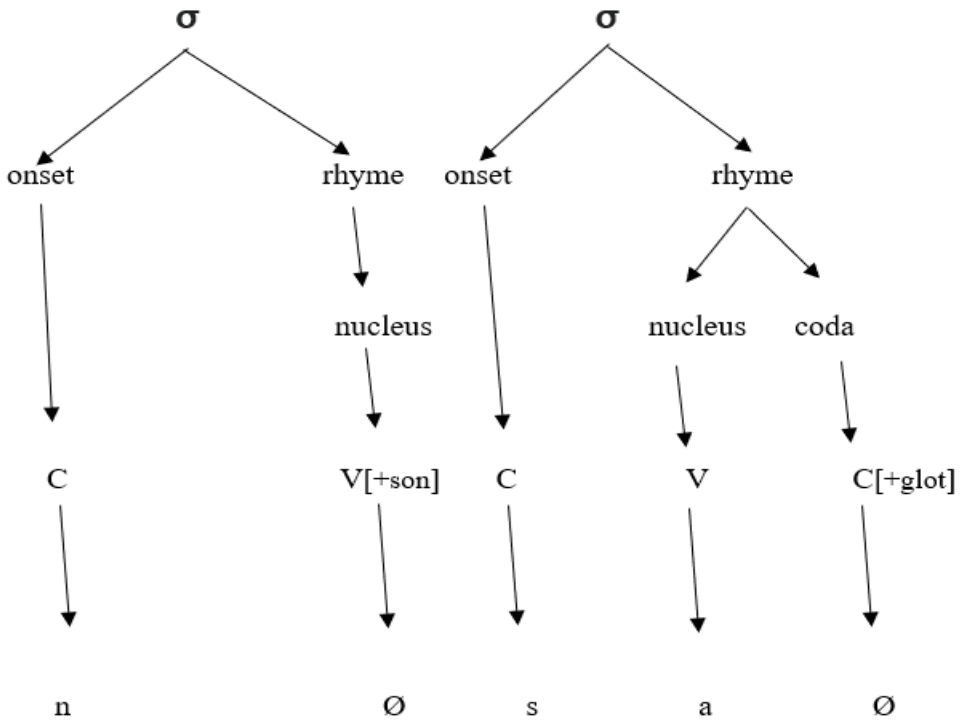


Figure 12: An X-skeleton analysis of apocope and syncope in the Orani dialect

Putting the same word under spectrographic scrutiny, we can observe a huge reduction in both initial and final position. The input (left) shows how both duration and intensity are relatively higher. However, the output (right) reveals a greater reduction suggesting that the Oranian dialect applies a vowel (i) deletion in the initial position and a glottal stop /ʔ/ in final position. See figure below:



Figure 13: A spectrographic analysis of apocope and syncope in the Oranian dialect

3.5. Metathesis

Last but not least, this paper discusses some metathesis examples found in the recordings. Metathesis is a phonological process in which letters and syllables within a given word are transposed. This type of phonological process is also common within the dialect used in the city of Oran, given examples such as:

Input	Output	Gloss
/ ʃams /	/ samʃ /	'sun'
/ gbad /	/ gdab /	'catch'
/ buhali /	/ hubali /	'stupid'

Table 9: Metathesis in the Oranian dialect

Although the use of these kinds of words is common among nearly everyone in the community of Oran, people recognize that they are not pronouncing certain words correctly. Nonetheless, they continue to use these pronunciations because they have been passed down from one generation to another. As a result, this phenomenon is classified as unnatural. This classification was established by Belvins (2004), who argued that metathesis is unnatural due to the lack of direct phonetic motivation and its less frequent occurrence. Similarly, Buckley (2011) claims that metathesis is unnatural because it does not align with common phonetic tendencies in that society; yet, it remains a marker of regional, social, or ethnic identity.

Conclusions and Recommendations

This paper used non-linear approaches to investigate assimilation and deletion processes manifested in the variety of Algerian Arabic spoken in the city of *Oran*. This paper has been allocated to deal with the assimilation of nasal / n /. This latter assimilates both partially and totally. Partial assimilation takes place both word-internally and across a word boundary when the /n/ sound immediately precedes the obstruent / b /, / k /, / g /, and / f /. Total assimilation, on the other hand, is manifested only across a word boundary when /n/ occurs before a sonorant consonant. It also focuses on the assimilation of / t /, which becomes [+voiced] when prefixed to words beginning with a voiced obstruent. We have also presented labialization when a consonant assimilates rounded vowel features.

Furthermore, the vowel deletion process (both apocope and syncope) is in the dialect of Oran. This latter displays various and different vowel deletion processes in other contexts. This paper highlights key examples of metathesis in the Oran dialect. However, this phenomenon is considered to be unnatural. In conclusion, it is strongly recommended that auto-segmental analysis be used in future phonological studies. This approach allows researchers to explore the complexities of phonological structures and articulations that cannot be adequately addressed by a simple linear string of segments. Additionally, it extends beyond just the place and manner of articulation, emphasizing other prosodic features such as rhythm, stress, and tone. These features are essential for studying any language or dialect across the globe.

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