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Sciences, TIKRIT UNIVERSITY. THIS IS AN
OPEN ACCESS ARTICLE UNDER THE CC BY
LICENSE<http://creativecommons.org/licenses/by/4.0/>**A Phonological Study of Mosuli
Dialect Assimilation****A B S T R A C T**

Assimilation is a phonological process which refers to the change of one sound by another sound under the influence of a third sound. The main reason behind this change is the speaker's tendency to economize the muscular effort or make ease of articulation or both. This study aims at finding out the assimilation patterns in Mosuli dialect() and divide these patterns in this dialect() according to the following factors:

1. Degree of influence.
2. The direction of influence (i.e., voicing, place of articulation, manner of articulation and Tafxim). The results show that Mosuli dialect tends to ease of articulation than that of economize the muscular effort, also they show that the Mosuli dialect uses only regressive assimilation depending on the factor of direction of influence, also the study shows the use of complete and partial assimilation depending on the degree of influence. © 2022 JTUH, College of Education for Human Sciences, Tikrit University

DOI: <http://dx.doi.org/10.25130/jtuh.29.12.1.2022.25>**دراسة صوتية للمائلة في اللهجة الموصلية**

م.م. رأفت ضياء رشاد/ المديرية العامة للتربية في محافظة نينوى

الخلاصة:

تعد المماثلة ظاهرة صوتية لها دور مهم في تطوير حقل اللغات العالمية، ويعود السبب الرئيس وراء هذا التغيير هو ميل المتكلم الى تسهيل المنطق أو الاختصار في الجهد أو كليهما معا، أي انه عند أداء الأصوات اللغوية هناك ميل لدى المتكلمين نحو إعطاء أقصى قدر من المعلومات بأقل وقت ممكن. وهدف الدراسة التوصل الى أنماط المماثلة في اللهجة الموصلية وتقسيم هذه الأنماط بالاعتماد على العوامل الآتية:

1. درجة التغيير.

2. اتجاه التغيير والصفات المتأثرة (أي الجهر و مخارج الصوت و نوعها بالإضافة الى التقخيم), إذ للتقخيم دور كبير في النظام الصوتي للغة العربية ولهجاتها. تبين النتائج أن اللهجة الموصلية تميل الى تسهيل النطق على حساب الاقتصاد في الجهد العضلي أثناء عملية المماثلة وكذلك تبين النتائج ان اللهجة الموصلية تستعمل فقط المماثلة التراجعية اعتمادا على عامل اتجاه التغيير وكذلك تظهر النتائج استخدام المماثلة التامة والجزئية اعتمادا على درجة التغيير.

الكلمات المفتاحية: المماثلة, عضلي, نطق

1. Introduction:

Assimilation is a general term in phonetics which refers to the replacement of one sound by another sound under the influence of a third sound which is near to it in the word or sentence (Jones, 1976:217). This process happens and can be found in the rapid, casual speech and less than in slow, careful speech. The question may raise, why do we use assimilation? The answer is that we use assimilation in order to:

- a. Economize the muscular effort.
- b. Make ease of articulation.

This study aims at investigating assimilation in Mosuli dialect⁽ⁱ⁾. This dialect⁽ⁱⁱ⁾ is spoken by the inhabitants of Mosul in the north of Iraq.

2. Data Collections:

The data are collected depending on certain group of people and almost most of them are educated people. It is worthy to mention that the people who are used in collecting these data are between 23 and 35 years of age also they are sixteen (16) in number and most of them are males.

3. Definition of Assimilation:

There are many definitions of assimilation, they seem to be alike. Ohala (1993:156) defines assimilation as "an articulatory process that involves the phonetic manifestation of a given sound due to its taking of some of some of the features of nearly sounds".

Jones (1976:217) defines assimilation as the process of replacing a sound by another sound under the influence of a third sound, which is near to it in the word or sentence.

According to Anderson (1974: 11 f), assimilation is a universal phenomenon and he asserts that " assimilation of one sound to a neighboring sound may be a language universal of change in as much as all languages. undergo assimilatory processes". This doesn't mean that all languages have the same patterns of assimilation. That is to say, what is easier for a speaker of one language may be difficult for a speaker of another language.

Windsor Lewis; (1969:43) shows assimilation as a sound at the beginning or the end of one word converted to some other phonemes owing to the influence of an adjacent word.

Another definition is that assimilation is a modification, by which an element becomes similar to another; defined by (Lehmann; 1976:115).

The similarity among those definitions is that they all focus on the fact that one sound becomes similar to the second one under the influence of a third one which is near to it in one word or more than one for example: happen/hæpm/ and good girl /gʊg gɜ: l/.

4. Types of Assimilation:

Assimilation can be classified into several types, these types depend on certain bases. In order to determine the type of assimilation. However, the following bases are used:

4.1. On the Basis of Direction of Influence:

In this context, direction of influence can be either regressive or progressive. When a sound influences a preceding one, this type of assimilation is called regressive. For example: horse shoe /hɔ: s fu/ → /hɔ: ʃfu:/. Here, in this example, the /f/ influencer the preceding /s/ and changes it into /ʃ/. (See Roach: 1988:105).

The second type of assimilation is called progressive. This type happens when a second sound influences a following sound. For example: happen /hæpn/ → /hæpm/. Here, in this example, the /p/ sound influences the following /n/ and changes into /m/.

There is another type of assimilation in terms of direction happens when two sounds merge together and give a third sound which is neither like the first nor the second. This type is called coalescent assimilation.

Coalescent assimilation has four forms:

- a. /t/ + /j/ → /tʃ/.
- b. /d/ + /j/ → /dʒ/.
- c. /s/ + /j/ → /ʃ/.
- d. /z/ + /j/ → /ʒ/.

For example: I miss you /aɪ mɪs ju/ → /aɪ mɪʃ u/. Here, /s/ and /j/ influence each other and merge together to become /ʃ/. (See: Jones, 1976: 218; Crystal, 1994:28)

4.2. On the Basis of Degree of Influence

By the degree of influence, we mean whether the resultant sound is identical or is just similar to the influencing sound. Here, in this case there are two types:

Firstly, when the resultant sound when the resultant sound is completely similar to the influencing sound. So, it is a complete assimilation.

Crystal (1994:28) gives an example for complete assimilation, ten mice /ten maɪs/ → /ten maɪs/. Here, /n/ is changed into /m/ under the influence of the following /m/.

On the other hand, when the resultant sound becomes similar to the influencing sound partially. So, we have partial assimilation. For example: ten bikes /ten baɪks/ → /tem baɪks/. In this example, /n/ is changed into /m/ under the influence of the following /b/ (See: Crystal, 1994:28).

4.3. On the basis of whether the change is Optional or Obligatory:

In this context, we deal with assimilation in two ways:

Jones (1976: 218) defines obligatory or historical assimilation as that which has taken place in the course of development of a language, and by which a word which was once pronounced in a certain way came to be pronounced subsequently in another way. For example: "Education" the reduction of the sequence /dj/ to the affricate /dʒ/ in /Idʒukeɪʃn/ → this transcription is due to Jones which some hundreds of years ago was once pronounced /Idjukeɪʃn/. Nowadays, this word is pronounced /Idʒukeɪʃn/. So, this example, illustrates historical coalescent assimilation.

On the other hand, the other type of assimilation is called optional assimilation, this type is used when the word occurs in a sentence and the pronunciation of this word differs from the pronunciation when it is said in isolation. Jones (1976:218) defines optional assimilation or contextual as "one which is occasioned when words are juxtaposed in a sentence, or in the formation of compounds and by which a word comes to have a pronunciation different from that which it has when said by itself". For example: the word "Government" → /gʌvənmənt/ → /gʌvəmmənt/. Here, both the two transcriptions can be used interchangeably and also they are accepted in normal English forms.

4.4. On the Basis of Distance Between Sounds:

Bolinger (1975:391) & Crystal (1994:28) have divided assimilation into contact or (contiguous) assimilation and distance or (non-contiguous) assimilation. For example: the phrase Ten bikes → /ten baɪks/ → /tem baɪks/ shows contact assimilation; here /n/ and /b/ are contact to each other. non-contiguous or (distance) assimilation, occurs in turn up trumps, where the /-n/ of turn may be articulated as /-m/ under the influence of later sound. /tʃ: n ʌp trʌmps/ → /tʃ: m ʌp trʌmps/. (Crystal, 1994: 22).

this example shows that /n/ and /p/ are distant from each other.

4.5. On the Basis of Type of Sounds Concerned:

Assimilation is the replacement of one sound by another under the influence of a third one. The influence could be one of four types; the first type is the influence of consonant-consonant. For example: the word happen /hæpən/ → /hæpm/. Here, in this example the /n/ is changed into /m/ under the influence of the preceding /p/.

The second type is the influence of vowel-vowel, i.e. Vowel harmony, for example: the historical (old) plural of the word "Man" This word was pronounced /manɪz/ where the /a/ is changed to /e/ under the influence /I/, resulting in /men/.

The third type is the influence of a consonant-vowel. Here, for example, the word Children /tʃɪldrən/. It was pronounced as such because of the influence of the dark [ɪ] on the preceding /I/.

The last type is the influence of vowel-consonant. A consonant may be influenced by a vowel, e.g.: the rounded and non-rounded /k/ before rounded /u:/ and non-rounded /i:/ in the English words "cool" and "key" respectively, (See: Sanderson, 1966: 15; Moscati and others 1969:56 and Jones, 1976: 224). However, this study is concerned with consonantal assimilation only.

4.6. On the Basis of Features Affected:

Gimson (1976:291) and Roach (1988: 105-106) show that assimilation can be classified according to the consonantal features affected as follows:

- a. **Place of articulation:** when the place of articulation of a given sound becomes identical with some sound in the environment. Such as: that man /ðæt mæn/ → /ðæp mæn/. Here, /t/ is changed into /p/ under the influence of the following /m/.
- b. **Manner of articulation:** when the manner of articulation of a sound becomes identical with the manner of another sound in its environment, such as: that side /ðæt saɪd/ → /ðæs saɪd/. Here, the /t/ is changed into /s/ under the influence of the following /s/.
- c. **Voicing:** when the voiced sound becomes voiceless and vice versa under the influence of another sound, such as: sit down /sɪt daʊn/. Here, the /t/ is changed into /d/ under the influence of the following /d/.

Examples of assimilation can be classified according to the previous criteria. For example: What may /wɒt meɪ/ → /wɒp meɪ/. Here, in this example, we change the place of articulation for /t/ into bilabial. So, we will get /p/.

In this context, we have contextual, regressive, partial assimilation in which the bilabial /p/ is replaced by the alveolar /t/ under the influence of the following nasal /m/.

Arab linguists such as Anis (1952:70) have a similar classification of assimilation according to the direction of influence, they talk about "Raj'i", and "Taqaddumi". They also talk about distance assimilation such as the word /ʔal ʃira: t/ → /ʔaʃʃira: t/. This word also has historical assimilation. They call the complete assimilation (Idgham).

According to the consonantal features affected, Arab linguists add a fourth feature which is called Tafxim⁽ⁱⁱⁱ⁾.

For the purpose of the present study, assimilation is viewed as a process of a consonantal phonemic change in which two adjacent consonants influence each other due to contextual factors. (See: Anis, 1952:70; Abdul-Tawwab, 1967:37 ; Ar-Rathi, 1988: 33; AL Hamad, 1988: 102 ; Al-Qaisy, 1990: 26; AL Mashhadani, 1997:11 f).

5. Assimilation Patterns in Mosuli Dialect:

Assimilation in Mosuli Arabic has certain patterns. In classifying these patterns, the following parameters are used:

- a. Number of features that are changed (place of articulation, manner of articulation, voicing and tafxim).
- b. Direction of influence.
- c. Degree of influence

5.1. Degree of Influence:

In this context, assimilation patterns are used in which only one feature is changed. This change could be in any of the four features, i.e., (place of articulation, manner of articulation, voicing and tafxim).

5.1.1. Place of Articulation:

Here, in this feature, there is no progressive assimilation. Changes of the complete, regressive assimilation may be of the following consonants (θ, ð, t, d, s, n, ʃ, k).

5.1.1.1. Complete Regressive Assimilation:

1. $\theta \rightarrow \begin{Bmatrix} s \\ ʃ \end{Bmatrix} \rightarrow \begin{Bmatrix} s \\ ʃ \end{Bmatrix}$ as in: /baħiθ saʃad/ → /baħis saʃad/. Saad's research.
as in: /baʃaθ ʃakar/ → /baʃaʃ ʃakar/. He sent sugar.
2. $\ð \rightarrow z/-z$ as in: /xið zajd/ → /xiz zajd/ "take zaid"
3. $t \rightarrow tʃ/-tʃ$ as in: /baʃaθit tʃiqle: t/ → /baʃaθitʃ tʃiqle: t/. She sent chock.
4. $d \rightarrow dʒ/-dʒ$ as in: /rad dʒa: sim/ → /radʒ dʒa: sim/. Jassim's response.
5. $s \rightarrow ʃ/-ʃ$ as in: /flu: s ʃa: kir/ → /flu: ʃ ʃa: kir/. Shakir's money.
6. $n \rightarrow m/-m$ as in: /kin mar/ → /kim mar/. he had passed.
7. $ʃ \rightarrow s/-s$ as in: /xo: ʃ siʃir/ → /xo: s siʃir/. Good price.
8. $k \rightarrow q/-q$ as in: /ʃilik qa: sim/ → /ʃiliq qa: sim/. Qaim's gum.

5.1.1.2. Partial Regressive Assimilation:

9. $\theta \rightarrow s/-z$ as in: /baħiθ zija:d/ → /baħis zija: d/. "Ziyad's research"
10. $s \rightarrow ʃ/-tʃ$ as in: /qi: s tʃa: diru/ → /qi: ʃ tʃa: diru/. "Try on his cover"
11. $n + m \begin{Bmatrix} p \\ b \end{Bmatrix}$ as in: /we: n pa: n kitu/ → /we: m pa: n kitu/. "Where is his fan".
as in: /ka: n bissija: ra/ → /ka: m bissija: re/. "He was in the car".

5.1.2. Manner of Articulation:

The other change is that of manner in which the assimilation could be complete or partial.

5.1.2.1 Complete Regressive Assimilation:

12. $t \rightarrow s/-s$ as in: /dʒa: bit samak/ → /dʒa: bis samak/. "She brought fish".
13. $t \rightarrow ʃ/-ʃ$ as in: /ħaʃ ʃamir/ → /ħaʃ ʃamir/. "He put wax".
14. $d \rightarrow z/-z$ as in: /baʃid zaki/ → /baʃiz zaki/. "After zeki".
15. $l - \begin{Bmatrix} d \\ r \\ z \\ n \end{Bmatrix} \begin{Bmatrix} d \\ r \\ z \\ n \end{Bmatrix}$ as in: /ma: l durajd/ → /ma: d durajd/. "That belongs to Duraid".
as in: /ma: l ra: mi/ → /ma: r ra: mi/. "That belongs to Rami".
as in: /ma: l zija: d/ → /ma: z zija: d/. "That belongs to Ziyad".
as in: /ma: l nuha/ → /ma: n nuha/. "That belongs to Nuha".

16. n- $\left\{ \begin{matrix} l \\ r \end{matrix} \right\} \left\{ \begin{matrix} l \\ r \end{matrix} \right\}$ as in: /min luma/ → /mil luma/. "from Luma".
as in: /min ramzi/ → /mir ramzi/. "From Ramzi".

17. ʃ → tʃ/tʃ as in: /xo: ʃ tʃanʃa/ → /xo: tʃ tʃanʃa/. "Good bog".

18. tʃ → ʃ/ʃ as in: /tʃakku: tʃ ʃa: kir/ → /tʃakku: ʃ ʃa: kir/. "Shakir's hammer".

5.1.2.2. Partial Regressive Assimilation:

19. tʃ → ʃ/	θ	as in: /ʃu: tʃ θa: bit/ → /ʃu: ʃ θa: bit/ "Thabit's fault"
	ð	as in: /ʃu: tʃ ða: kir/ → /ʃu: ʃ ða: kir/ "Thakir's fault"
	t	as in: /ʃu: tʃ ta: taḥsi: n/ → /ʃu: ʃ taḥsi: n/ "Tahn's fault"
	ʈ	as in: /ʃu: tʃ ʈa: ha/ → /ʃu: ʃ ʈa: ha/ "Taha's fault"
	d	as in: /ʃu: tʃ dala: l/ → /ʃu: ʃ dala: l/ "Dalaal's fault"
	s	as in: /ʃu: tʃ saʃad/ → /ʃu: ʃ saʃad/ "Saad's fault"
	ʂ	as in: /ʃu: tʃ ʂubḥi/ → /ʃu: ʃ ʂubḥi/ "Subhi's fault"
	n	as in: /ʃu: tʃ nuha/ → /ʃu: ʃ nuha/ "Nuha's fault"
	l	as in: /ʃu: tʃ lajla/ → /ʃu: ʃ lajla/ "Layla's fault"
	ʎ	as in: /ʃu: tʃ ʎaṭi: f/ → /ʃu: ʃ ʎaṭi: f/ "Latif's fault"
	k	as in: /ʃu: tʃ karam/ → /ʃu: ʃ karam/ "Karam's fault"
	x	as in: /ʃu: tʃ xali: l/ → /ʃu: ʃ xali: l/ "Khalil's fault"
	q	as in: /ʃu: tʃ qajs/ → /ʃu: ʃ qajs/ "Qais fault"

5.1.3. Voicing:

5.1.3.1. Complete Regressive Assimilation:

In Mosuli Arabic both voiceless → voiced and voiced → voiceless assimilation exist.

a. Voiced-Voiceless:

In this case the assimilation is a complete, regressive one in which a voiced consonant is replaced by a voiceless one.

20. b → p/ → p as in: /dʒa: b pa: nka/ → /dʒa: p pa: nka/ "He brought a fan"

21. ð → Θ/→ Θ as in: /xið eu: m/ → /xiə eu: m/ "Take garlic"

22. d → t/→ t as in: /rad taqwa/ → /rat taqwa/ "Taqwa's response"

23. z → s/→ s as in: /fa: z saʕad/ → /fa: s saʕad/ "Saad won"

24. dʒ → tʃ/→ as in: /fadʒ tʃartʃaf/ → /fatʃ tʃartʃaf/ "He spread"

25. g → k/→ k as in: /dʒak karam/ → /dʒak karam/ "Karam's jack"

b. Voiceless- Voiced:

26. p → b/→ b as in: /kab bi: dʒo/ → /kab bi: dʒo/ "Peugeot cap"

27. Θ → ð → ð as in: /baʕaΘ ðahab/ → /baʕað ðahab/ "He sent gold"

28. t → d/→ d as in: /rasamit da: ʔira/ → /rasamid da: ʔira/ "She painted a circle"

29. s → z/→ z as in: /his zajd/ → /hiz zajd/ "Zaid's voice"

30. tʃ → dʒ/→ dʒ as in: /ʃu: tʃ dʒama: l/ → /ʃu: dʒ dʒama: l/ "Jamal's fault"

31. k → g/→g as in: /ʕindak ga: z/ → /ʕindag ga: z/ "you have gas (0.7)"

5.1.3.2. Partial Regressive Assimilation:

a. Voiced-Voiceless:

32. b → p/→	θ	as in: /dʒa: b Gu: m/ → /dʒa: p θu: m/ "He brought garlic"
	t	as in: /dʒa: b taksi/ → /dʒa: p taksi/ "He brought a taxi"
	ʈ	as in: /dʒa: b ʈa: wa/ → /dʒa: p ʈa: wa/ "He brought a pan"
	s	as in: /dʒa: b sikki: n/ → /dʒa: p sikki: n/ "He brought a knife"
	ʃ	as in: /dʒa: b ʃa: ʃ/ → /dʒa: p ʃa: ʃ/ "He brought sauce"
	f	as in: /dʒa: b ʃa: mijja/ → /dʒa: p ʃa: mijja/ "He brought popcorn"
	tʃ	as in: /dʒa: b tʃa: dir/ → /dʒa: p tʃa: dir/ "He brought a cover"
	k	as in: /dʒa: b kita: b/ → /dʒa: p kita: b/ "He brought a book"
	x	as in: /dʒa: b xibiz/ → /dʒa: p xibiz/ "He brought bread"
	q	as in: /katab qiša/ → /katap qišša/ "He wrote a story"

33. ð → θ/→	p	as in: /xið pa: tri/ → /xiθ pa: tri/ "Take a battery"
	f	as in: /xið flu: s/ → /xiθ flu: s/ "Take money"
	t	as in: /xið tamir/ → /xiθ tamir/ "Take date"
	ʈ	as in: /xið ʈama: ʈa/ → /xiθ ʈama: ʈa/ "Take tomato"
	s	as in: /xið samak/ → /xiθ samak/ "Take fish"
	ʃ	as in: /xið ʃandu: q/ → /xiθ ʃandu: q/ "Take a boat"
	k	as in: /xið kita: b/ → /xiθ kita: b/ "Take a book"
	x	as in: /xið xal/ → /xiθ xal/ "Take vinegar"
	q	as in: /xið qu: ri/ → /xiθ qu: ri/ "Take a pot"
	h	as in: /xiðħab/ → /xiθħab/ "Take seeds"

34. d→t/→	p	as in: /sad pa:ke: tu/ → /sat pa:tu/ "He closed his packet"
	f	as in: /rad fira: s/ → /rat fira: s/ "Firas's response"
	s	as in: /ʃad sa: lim/ → /ʃa: t sa: lim/ "He tied salim"
	ʃ	as in: /rad ʃaba: ħ/ → /rat ʃaba: ħ/ "Sabaħ's response"
	ʒ	as in: /ʃad ʃa: kir/ → /ʃat ʃa: kir/ "He tied Shakie"
	k	as in: /rad karam/ → /rat karam/ "Karam's response"
	x	as in: /ʃad xali: l/ → /ʃat xali: l/ "He tied Khalil"
	q	as in: /ʃad qajs/ → /ʃat qajs/ "He tied Qais"
	h	as in: /radħa: zim/ → /rat ħa: zim/ "Hazim's response"

35. z→s/→	p	as in: /jdʒu: z pa:nkitu/ → /jdʒu: s pa: nkitu/ "Perhaps his fan"
	f	as in: /fa: z fathi/ → /fa: s fathi/ "Fathi won"
	θ	as in: /me: z θa: bit/ → /me: s θa: bit/ "Fixed table"
	t	as in: /fa: z taħsi: n/ → /fa: s taħsi: n/ "Tahsin won"
	ʈ	as in: /me: z ʈawi: ʈawi: l/ → /me: s ʈawi: l/ "long table"
	ʃ	as in: /fa: z ʃa: kir/ → /fa: s ʃa: kir/ "Shakir won"
	tʃ	as in: /jdʒu: z tʃarazu/ → /jdʒu: stʃarazu/ "Perhaps his nuts"
	k	as in: /blu: z kari: m/ → /blu: s kari: m/ "Karim's sweater"
	x	as in: /fa: z xa: lid/ → /fa: s xa: lid/ "Khalid won"
	q	as in: /ʕazi: z qa: sim/ → /ʕazi: s qa: sim/ "Aziz Qasim"
	h	as in: /xibiz ħar/ → /xibis ħa: r/ "Hot bread"

36. dʒ→tʃ/→	p	as in: / fadʒ parda/ →/fatʃ parda/ "He spread a curtain.
	f	as in: /ħadʒ fahad/ → /ħatʃ fahad/ "Haj Fahad"
	t	as in: /ħadʒ tami: m/ →/ħatʃ tami: m/ "Haj Tameem"
	ʈ	as in: /ħadʒ ʈa: ha/ →/ħatʃ ʈa: ha/ "Haj Taha"
	s	as in: /ħadʒ saʕad/ →/ħatʃ saʕad/ "Haj Saa'd"
	ʃ	as in: /ħadʒ ʃa: bir/ →/ħatʃ ʃa: bir/ "Haj sabir"
	k	as in: /ħadʒ ka: mil/ →/ħatʃ ka: mil/ "Haj Kamil"
	x	as in: /ħadʒ xali: l/ →/ħatʃ xali: l/ "Haj Khalil"
	q	as in: /ħadʒ qajs/ →/ħatʃ qajs/ "Haj Qais"
	h	as in: /ħadʒ ħa: zim/ →/ħatʃ ħa: zim/ Haj Hazim"

37. g→k/→	p	as in: / bang pa:ri:s/ → / bank pa:ri:s/ "Paris bank"
	f	as in: /dʒag fahad/ → /dʒak fahad/ "Fahad's Jack"
	θ	as in: /dʒag θa: mir/ → /dʒak θa: mir/ "Thamir's Jack"
	t	as in: /dʒag tami: m/ → /dʒak tami: m/ "Tameem's Jack"
	ʈ	as in: /dʒag ʈa: riq/ → /dʒak ʈa: riq/ "Tariq's Jack"
	s	as in: /dʒag sa: mi/ → /dʒak sa: mi/ "Sami's Jack"
	ʃ	as in: /dʒag ʃubhi/ → /dʒak ʃubhi/ "Subhi's Jack"
	ʃ	as in: /dʒag ʃari: f/ → /dʒak ʃari: f/ "Sharif's Jack"
	ʈf	as in: /gamrag ʈfanʈitu/ → /gamrak ʈfanʈitu/ He imposed a customer on his bag"
	h	as in: /dʒagħasan/ → /dʒak ħasan/ "Hasan's Jack"

b. Voiceless-Voiced:

38. p → b/ {
 39. θ → ð/ {
 40. s → z/ {
 41. k → g/ {
- ð as in: /kap ða: kir/ → /kab ða: kir/ "Thakir's cap"
- d as in: /kap zuhe: r/ → /kab zuhe: r/ "Zuher's cap"
- ð as in: /wirie durajd/ → /wirið durajd/ "Duraidd's inheritance"
- g as in: /baʃaə ðahab/ → /baʃað ðahab/ "He sent gold"
- ð as in: /his ða: kir/ → /hiz ða: kir/ "Thakir's voice"
- ð as in: /his ða: biʈ/ → /hiz ða: biʈ/ "An officer voice"
- d as in: /his durajd/ → /hiz durajd/ "Duraidd's voice"
- dʒ as in: /his dʒa: sim/ → /hiz dʒa: sim/ "Jasim's voice"
- ð as in: /ʃilik ða: fir/ → /ʃilig ða: fir/ "Thafir's gum"
- z as in: /ʃak za: hir/ → /ʃag za: hir/ "Zahir's cheque"
- dʒ as in: /samak dʒa: hiz/ → /samag dʒa: hiz/ "Cooked fish"

5.1.3. Tafxim:

5.1.4.1. Complete Regressive Assimilation:

42. ð → ʈ → ð as in: /ʔaxað ðarif/ → /ʔaxaʈ ðarif/ "He took an envelope"

43. $t \rightarrow \text{ṭ} \rightarrow \text{ṭ}$ as in: /katabit ṭalab/ \rightarrow /katabiṭ ṭalab/ "She wrote a request"

44. $\text{ṭ} \rightarrow t \rightarrow t$ as in: /xaṭ tiṣba: n/ \rightarrow /xat tiṣa: n/ "bad handwriting"

45. $s \rightarrow \text{ṣ} \rightarrow \text{ṣ}$ as in: /his ṣaba: ḥ/ \rightarrow /hiṣ ṣaba: ḥ/ "Sabah's voice"

In this case of assimilation, we only have complete regressive assimilation.

5.2. Assimilation Changes in Two Features:

Other possibilities of assimilation in Mosuli Arabic are valid in combining any two of the three features given; these combinations are:

- voice \rightarrow place of articulation.
- voice \rightarrow manner of articulation.
- voicing \rightarrow Tafxim.
- place \rightarrow manner of articulation.
- Place \rightarrow tafxim.
- manner \rightarrow tafxim.

5.2.1. voicing + place:

5.2.1.1. Complete Regressive Assimilation:

46. $\Theta \rightarrow z/z$ as in: /baṣaΘ zajtu: n/ \rightarrow /baṣaz zajtu: n/ "He sent olive"

47. $\left\{ \begin{matrix} \text{ṣ} \\ \text{s} \end{matrix} \right\} \left\{ \begin{matrix} \text{ṣ} \\ \text{s} \end{matrix} \right\}$ as in: /xiḏṣarbat/ \rightarrow /xiṣṣarbat/ "Take juice"

as in: /xiḏ sijja: ra/ \rightarrow /xiṣ sijja: ra/ "Take a car"

48. $\text{ḏ} \rightarrow \text{ṣ}/\rightarrow \text{ṣ}$ as in: /xiḏ ṣa: bu: n/ \rightarrow /xiṣ ṣa: bu: n/ "Take soap"

49. $t \rightarrow d\text{ṣ}/\rightarrow d\text{ṣ}$ as in: /be: t dṣa: sim/ \rightarrow /be: dṣ dṣa: sim/ "Jasim's house"

50. $d \rightarrow t\text{ṣ}/\rightarrow t\text{ṣ}$ as in: /sad tṣakmatṣitu/ \rightarrow /satṣ tṣakmatṣitu/ "He closed his drawer"

51. $s \rightarrow \text{ḏ}/\rightarrow \text{ḏ}$ as in: /his ḏa: kir/ \rightarrow /hiḏ ḏa: kir/ "Thakir's Voice"

52. $z \left\{ \begin{matrix} \Theta \\ \text{ṣ} \end{matrix} \right\} \left\{ \begin{matrix} \Theta \\ \text{ṣ} \end{matrix} \right\}$ as in: /hiz Θu: m/ \rightarrow /hiΘ Θu: m/ "A piece of garlic"

as in: /me: z ṣa: mil/ \rightarrow /me: ṣ ṣa: mil/ "Shamil's table"

53. $g \rightarrow q/\rightarrow q$ as in: /dṣag qajs/ \rightarrow /dṣaq qajs/ "Qais jack"

5.2.2. Voicing + Manner:

5.2.2.1. Complete Regressive Assimilation:

54. $t \rightarrow z/\rightarrow z$ as in: /dṣa: bit zala: bja/ \rightarrow /dṣa: biz zala: bja/ "She brought dumpling"

55. $d \rightarrow s/\rightarrow s$ as in: /rad sami: r/ \rightarrow /ras sami: r/ "Samir's response"

$\left\{ \begin{matrix} t \\ s \end{matrix} \right\} \left\{ \begin{matrix} t \\ s \end{matrix} \right\}$ as in: /ʔakal timman/ \rightarrow /ʔakat timman/ "He ate rice"

as in: /qa: l sa: mi/ \rightarrow /qa: s sa: mi/ "Sami said"

56. l

57. l → t/ → t as in: /go: l ʔa: ha/ → /go: t ʔa: ha/ "Taha's goal"

58. ʃ → dʒ → dʒ as in: /xo: ʃ dʒ: zar/ → /xo: dʒ: zar/ "Good carrot"

59. dʒ / → ʃ/ → ʃ as in: /ʃila: dʒ ʃahad/ → /ʃila: ʃ ʃahad/ "Shahad's cure"

60. g → x/ → x as in: /dʒag xa: lid/ → /dʒax xa: lid/ "Khalid Jack"

5.2.2.2. Partial Regressive Assimilation:

61. dʒ → ʃ

⎧	θ	as in: /ħadʒθa: bit/ → /ħaʃθa: bit/ "Haj Thabit"
⎪	t	as in: /ħadʒ tawfi: q/ → /ħaʃ tawfi:q/ "Haj Tawfeeq"
⎪	ʔ	as in: /ħadʒ ʔa: hir/ → /ħaʃ ʔa: hir/ "Haj Saa'd"
⎪	s	as in: /ħadʒ saʕad/ → /ħaʃ saʕad/ "Haj Saa'd"
⎪	ʂ	as in: /ħadʒ ʂa: bir/ → /ħaʃ ʂa: bir/ "Haj Saad"

5.2.3. Voicing + Taffim: k → ʔ as in: /ħadʒ karam/ → /ħaʃ karam/ "Haj Karam"

5.2.3.1. Complete Regressive Assimilation:

62. θ → ð → ð/ as in: /baħiθ ða: fir/ → /baħið ða: fir/ "Dhafir's research"

63. ð → θ → θ/ as in: /ħað θa: bit/ → /ħaθ θa: bit/ "Thabit's luck"

64. d → ʔ → ʔ/ as in: /rad ʔa: riq/ → /raʔ ʔa: riq/ "Tariq's response"

65. ʂ → z → z/ as in: /pa: ʂ zajd/ → /pa: z zajd/ "Zaid's bus"

66. z → ʂ → ʂ/ as in: /jdʒu: z ʂaħi: ħ/ → /jdʒu: ʂ ʂaħi: ħ/ "Perhaps true"

5.2.4. Place + Manner:

5.2.4.1. Complete Regressive Assimilation:

67. p → f/ → f as in: /kap fira: s/ → /kaf fira: s/ "Firas cap"

68. θ → tʃ/ → tʃ as in: /baʕaθ tʃa: ke: t/ → /baʕatʃ tʃa: ke: t/ "He sent a jacket"

69. ð

⎧	d	⎧	d	as in: /ʔaxað daftar/ → /ʔaxad daftar/ "He took a copy book"
⎪	dʒ	⎪	dʒ	as in: /ʔaxað dʒibin/ → /ʔaxad dʒibin/ "He took cheese"

70. t

⎧	θ	as in: /ma: t θa: mir/ → /ma: θθa: mir/ "Thamir died"
⎪	ʃ	as in: /dʒabit ʃakar/ → /dʒa: biʃʃakar/ "She brought sugar"

71. d → ð/ → ð as in: /baʕid ða: kir/ → /baʕið ða: kir/ "After Thakir"

72. s → tʃ/ → tʃ as in: /libis tʃa: ke: t/ → /libitʃ tʃa: ke: t/ "He put on a jacket"

73. z → dʒ/ → dʒ as in: /me: z dʒama: l/ → /me: dʒ dʒama: l/ "Jamal's table"

74. n $\left\{ \begin{matrix} w \\ j \end{matrix} \right\} \left\{ \begin{matrix} w \\ j \end{matrix} \right\}$ as in: /min wisa: m/ → /miw wisa: m/ "From Wisam"
as in: /min ja: sir/ → /mij ja: sir/ "From Yasir"
75. h $\left\{ \begin{matrix} \tilde{o} \\ d^3 \end{matrix} \right\} \left\{ \begin{matrix} \tilde{o} \\ d^3 \end{matrix} \right\}$ as in: /ʕimil ḏarra/ → /ʕimiḏ ḏarra/ "He made pop-corn"
as in: /ʔakal dʒibis/ → /ʔakadʒ dʒibis/ "He ate some chips"
76. tʃ $\left\{ \begin{matrix} \tilde{o} \\ s \end{matrix} \right\} \left\{ \begin{matrix} \tilde{o} \\ s \end{matrix} \right\}$ as in: /ʕu: tʃ θa: bit/ → /ʕu: θ θa: bit/ "Thabit's fault"
as in: /ʕu: tʃ sami: r/ → /ʕu: s sami: r/ "Samir's fault"
77. dʒ /→ z/ → z as in: /zo: dʒ zajnab/ → /zo: z zajnab/ "Zainab's husband"

5.2.5 Place + Tafxim:

5.2.5.1. Complete Regressive Assimilation:

78. θ → ʃ /→ ʃ/ as in: /baḥiθ ʕaʕib/ → /baḥiʃ ʕaʕib/ "Difficult research"
79. ḏ → z /→ z/ as in: /ḥaḏ zajnab/ → /ḥaz zajnab/ "Zainab's luck"
80. ʔ → tʃ /→ tʃ/ as in: /ḥaʔ tʃaṇṭitu/ → /ḥatʃ tʃaṇṭitu/ "He put his bag"
81. z → ḏ → ḏ as in: /fa: z ḏijja: ʔ/ → /fa: ḏ ḏijja: ʔ/ "Dhiyaa' won"
82. ʃ → ʕ → ʕ as in: /xo: ʃ ʕa: bo: n/ → /xo: ʕ ʕa: bo: n/ "Good soap"

5.2.6. Manner + Tafxim:

5.2.6.1. Complete Regressive Assimilation:

83. t → ʕ /→ ʕ/ as in: /baʕaəit ʕu: ra/ → /baʕaəiʃ ʕu: ra/ "She sent an image"
84. ʔ → s /→ s/ as in: /ḥaʔ sikki: n/ → /ḥas sikki: n/ "He put a knife"

5.3. Three Feature Changes:

In this context the following possibilities can be used:

- (1) Voicing – place – manner: (2) Voicing – place – tafxim: (3) Voicing – manner – tafxim:
(4) Place – manner – tafxim.

5.3.1. Voicing Place Manner:

5.3.1.1. Complete Regressive Assimilation:

85. b → f /→ f/ as in: /dʒa: b filfil/ → /dʒa: f filfil/ "He brought pepper"
86. θ → dʒ /→ dʒ/ as in: /baʕaə dʒibin/ → /baʕadʒ dʒibin/ "He sent cheese"
87. ḏ $\left\{ \begin{matrix} t \\ tʃ \end{matrix} \right\} \left\{ \begin{matrix} t \\ tʃ \end{matrix} \right\}$ as in: /ʔaxaḏ taksi/ → /ʔaxat taksi/ "He took a taxi"
as in: /xiḏ tʃakku: tʃ/ → /xitʃ tʃakku: tʃ/ "take a hammer"
88. ḏ → t /→ t/ as in: /be: ḏ ʔa: ha/ → /be: t ʔa: ha/ "Taha's eggs"
89. t → ḏ /→ ḏ/ as in: /dʒa: bit ḏarra/ → /dʒa: biḏ ḏarra/ "She brought some"

90. $\text{t} \rightarrow \text{ð} \rightarrow \text{ð}$ as in: /xaṭ ðijja: ʔ/ → /xað ðijja: ʔ/ "Dhiyaa's hand writing"

91. d $\left\{ \begin{array}{c} \theta \\ \text{f} \end{array} \right\} \left\{ \begin{array}{c} \theta \\ \text{f} \end{array} \right\}$ as in: /ʔi: d θa: mir/ → /ʔi: θθa: mir/ "Thamir's hand"
as in: /ʔi: d ʃa: kir/ → /ʔi: ʃʃa: kir/ "Shakir's hand"

s → dʒ/ → dʒ as in: /ħabas dʒasim/ → /ħabadʒ dʒasim/ "He put Jassim in prison"

92. l $\left\{ \begin{array}{c} \theta \\ \text{j} \\ \text{tʃ} \end{array} \right\} \left\{ \begin{array}{c} \theta \\ \text{j} \\ \text{tʃ} \end{array} \right\}$ as in: /ma: l θa: bit/ → /ma: θθa: bit/ something that belongs to thabit"
as in: /qa: l ʃe: / → /qa: ʃʃe: / "He said something"
as in: /ʃa: l tʃa: ketu/ → /ʃa: tʃ tʃa: ketu/ "He carried his Jacket"

93. tʃ → /z/ → z as in: / swi: tʃ zija: d/ → /swi: z zija: d/ "Ziad's key"

94. dʒ/ → s/ → s as in: /ħadʒ sa: mir/ → /ħas sa: mir/ "Haj Samir"

5.3.1.2. Partial Regressive Assimilation:

95. ð → t/ → t as in: /fað tidʒa: ritu/ → / faṭ tidʒa: ritu/ "He finished with his business."

5.3.2. Voicing Place Tafxim:

5.3.2.1. Complete Regressive Assimilation:

96. ð → ʃ/ → ʃ as in: /ʔaxað ʃa: bu: n/ → /ʔaxaʃ ʃa: bu: n/ "He took soap"

97. ð $\left\{ \begin{array}{c} s \\ \text{f} \end{array} \right\} \left\{ \begin{array}{c} s \\ \text{f} \end{array} \right\}$ as in: /be: ð ʃami: r/ → /be: s sami: r/ "Samir's egg"
as in: /ħað ʃa: kir/ → /ħaʃ ʃa: kir/ "Shakir's luck"

98. t → dʒ/ → dʒ as in: /ħaṭ dʒ: zmitu/ → /ħadʒ dʒ: zmitu/ "He put his waders"

99. s → ð/ → ð as in: /his ða: biṭ/ → /hið ða: biṭ/ "An officer's voice"

5.3.3. Voicing Manner Tafxim:

5.3.3.1. Complete Regressive Assimilation:

100. d → ʃ/ → ʃ as in: /rad ʃubhi/ → /raʃ ʃubhi/ "Subhi's response"

101. l $\left\{ \begin{array}{c} t \\ \text{ʃ} \end{array} \right\} \left\{ \begin{array}{c} t \\ \text{ʃ} \end{array} \right\}$ as in: /ma: l ʔa: ha/ → /ma: tʔa: ha/ something that belongs to Taha"
as in: /ʃa: l ʃandu: q/ → /ʃa: ʃʃandu: q/ "He carried a box"

102. l → s/ → s as in: /go: l sa: lim/ → /go: s sa: lim/ "Salem's goal"

5.3.4. Place Manner Tafxim:

5.3.4.1 Complete Regressive Assimilation:

103. $\delta \rightarrow d\zeta / \rightarrow d\zeta$ as in: /ħaδ dʒa: sim/ → /ħadʒ dʒa: sim/ "Jassim's luck"
104. $t \left\{ \begin{matrix} \theta \\ \end{matrix} \right\} \left\{ \begin{matrix} \theta \\ \end{matrix} \right\}$ as in: /ħaʈ θu: m/ → /ħaθ θu: m/ "He put garlic"
- $\left\{ \begin{matrix} \theta \\ \end{matrix} \right\} \left\{ \begin{matrix} \theta \\ \end{matrix} \right\}$ as in: /ħaʈʃaker/ → /ħaʃʃaker/ "He put sugar"
105. $d \rightarrow \delta / \rightarrow \delta$ as in: /ʃad δahru/ → /ʃaδ δahru/ "He tied his back"
106. $\varsigma \rightarrow tʃ / \rightarrow tʃ$ as in: /qaʃ tʃa: ke: tu/ → /qatʃ tʃa: ke: tu/ "He cut his Jacket"
107. $h \rightarrow \delta / \rightarrow \delta$ as in: /qa: l δijja: ʔ/ → /qa: δ δijja: ʔ/ "Dhiyaa' said"
108. $l \left\{ \begin{matrix} \delta \\ d\zeta \end{matrix} \right\} \left\{ \begin{matrix} \delta \\ d\zeta \end{matrix} \right\}$ as in: /go: l δa: kir/ → /go: δ δa: kir/ "Thakir's goal"
- $\left\{ \begin{matrix} \delta \\ d\zeta \end{matrix} \right\} \left\{ \begin{matrix} \delta \\ d\zeta \end{matrix} \right\}$ as in: /go: l dʒami: l/ → /go: dʒ dʒami: l/ "Jamel's goal"
109. $tʃ \rightarrow \varsigma / \rightarrow \varsigma$ as in: /ʃu: tʃ ʃa: bir/ → /ʃu: ʃ ʃa: bir/ "Sabir's fault"

5.4. Four Feature Changes:

In this type of change, we have four features of change, yet they are very few; they are:

5.4.1 Voicing Place Manner Tafxim:

5.4.1.1. Complete Regressive Assimilation:

110. $\delta \rightarrow t / \rightarrow t$ as in: /xiδ ʔa: wa/ → /xiʈ ʔa: wa/ "Take a pan"
111. $\delta \rightarrow tʃ / \rightarrow t$ as in: /ʔiriδ tʃa: diru/ → /ʔiritʃ tʃa: diru/ "His cover's width"
112. $t \rightarrow \delta / \rightarrow \delta$ as in: /ʔaxaδit δarif/ → /ʔaxaδiδ δarif/ "She took an envelope"
113. $\varsigma \rightarrow d\zeta / \rightarrow d\zeta$ as in: /qaraʃ dʒa: sim/ → /qaradʒ dʒa: sim/ "someone tweaked Jasim"
114. $d\zeta \rightarrow \varsigma / \rightarrow \varsigma$ as in: /ħadʒ ʃa: diq/ → /ħaʃ ʃa: diq/ "Haj Sadiq"

6. Conclusion:

It is taken for granted that the process of assimilation is adopted to ease the articulation and economize muscular effort (as it is known in all world languages).

The research has been divided into several sections in which assimilation has been accounted for generally and specifically (i.e., in Mosuli Arabic). The facts that have come to be observed are that Mosuli dialect uses only regressive assimilation in terms of direction of influence, and both complete and partial assimilations exist in terms of degree of influence.

In addition to the three features, place of articulation, manner of articulation and voicing, there is another feature exists in Mosuli dialect which is Tafxim. This feature has only one form which is complete regressive assimilations.

Assimilation in Mosuli Arabic shows the following changes:

place of articulation	Manner of articulation	Voicing
bilabial → labio-dental.	stop → fricative.	voiceless-voiced
inter-dental → dental.	fricative → stop.	voiced-voiceless
inter-dental → palatal.	lateral → stop.	
dental → bilabial.	dental → fricative.	
dental → inter-dental.	lateral → nasal.	
dental → palatal.	nasal → lateral.	
palatal → dental.	nasal → approximant.	
palatal → inter-dental.		
velar → uvular		

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- (i) Mosuli dialect is among many dialects in Iraq, it is spoken by at least 2 million people in the north of Iraq. It stands out from other dialects in many crucial respects: Phonological, lexical and grammatical (See Saeed. 1988:15 and Saeed; 2006: 692).
 - (ii) Dialect refers to a variety of language which is different from others not just in pronunciation, but also in vocabulary, grammar and word-order. On the other hand, accent is a variety of language which is different from other varieties in pronunciation only. (See Roach 1983: -44).
 - (iii) **Tafxim:** Plays an important role in Arabic phonology (See: Rahim 1980: 187 ff) since it distinguishes words of different meaning.