Topographical Divergences and their Impact on Linguistic Variation: An Arabic Eco- Linguistic Study

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Abstract

The reciprocal influences between the human being and the ecology are inseparable. If any change occurs in the surroundings, man as individual, as well as the whole society of which he forms part, tries to accommodate and cope with these changes in order to face the environmental challenges. Linguistics reflects the aforesaid changes in response to geographical features. This paper aims to determine the linguistic features (at the phonological level) of the people who live in mountainous areas as opposed to those who live on the plains / in coastal areas. It also aims to determine the impact of tough and harsh geography, on the one hand, and simple and plain geography, on the other, on linguistic variation. Every group of people that lives in a specific geographical area is characterized by unique linguistic forms that reflect the physical geographical features of the piece of land they live on. This natural balance between man's activities and his ecology prompted the researcher to study the topographical changes and their impact on linguistic variation in an eco-linguistic study into Yemeni Arabic. The researcher collected as much data as possible from the residents of both areas in order to make a comparative ecological linguistic study to verify the underlying hypothesis in this study.

Key Words: Eco-linguistics- plain areas- mountainous area

التباينات الطوبوغرافية وأثرها في التنوع اللغوي:
دراسة بيئية ـ لغوية على العربية

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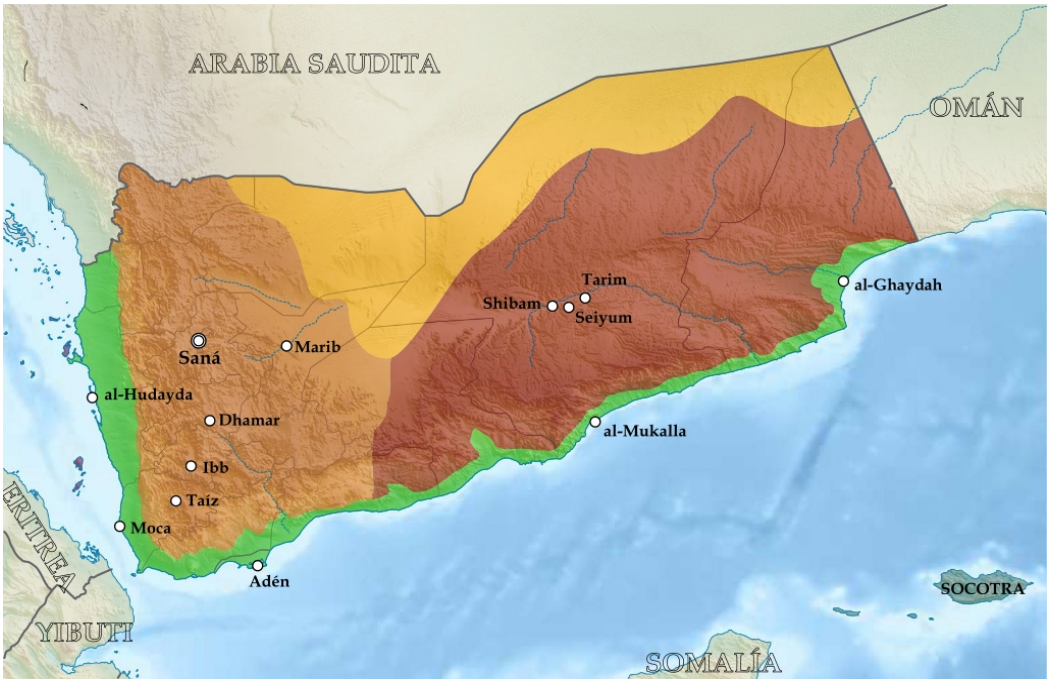
الملخص

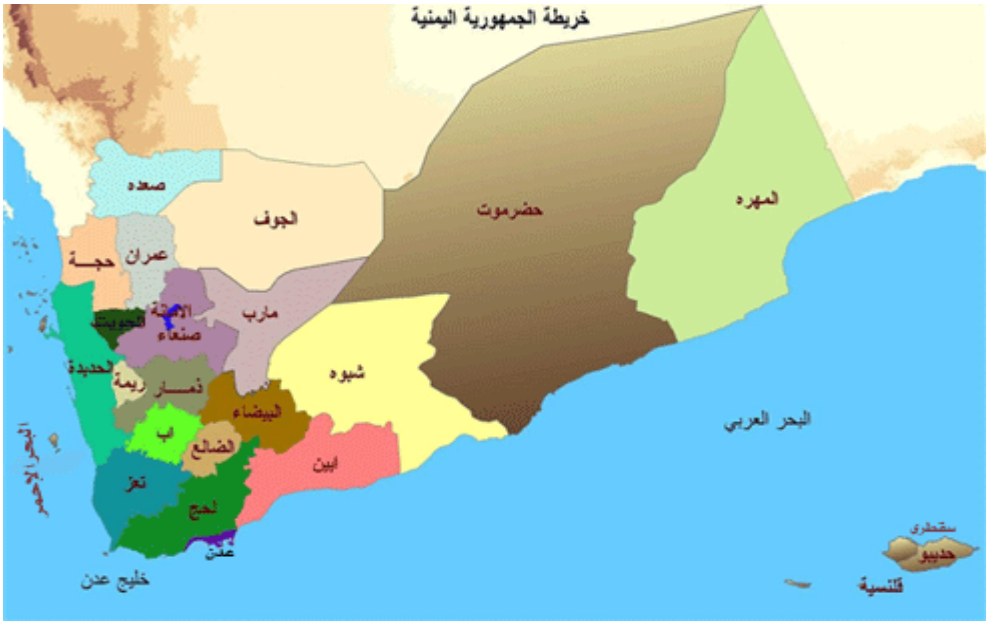
إن التأثيرات المتبادلة بين الإنسان وبيئته لا يمكن الفصل بينها، فإذا ما طرأ تغيير على بيئة الإنسان، فإنه كفرد وكعضو في المجتمع ينحو نحو التكيف والتعامل مع تلك التغييرات لمواجهة تغييرات البيئة. ومجال اللغة يعكس مثل تلك التغييرات التي تأتي استجابةً لمظاهر التغير الجغرافي. ويسعى البحث الحالي إلى تحديد المظاهر اللغوية عند مستوى اللفظ للجماعات البشرية التي تقطن في المناطق الجبلية مقارنة بأقرانهم ممن يقطنون في السهول أو المناطق الساحلية. كما تهدف الدراسة إلى تحديد أثر الجغرافية الوعرة والبيئة الجشبة من جانب، وكذلك أثر جغرافية السهول والسواحل من جانب آخر، على التنوع اللغوي. فكل جماعة بشرية تقطن أياً من تلك المناطق الجغرافية النوعية تتميز بخصائص وتراكيب ومفردات لغوية تعكس السمات الجغرافية للبيئات المادية التي يقطنون فيها. وهذا التوازن بين نشاط الإنسان وبيئته هو ما دفع الباحث إلى دراسة التغيرات الطوبوغرافية وأثرها في التنوع اللغوي في دراسة ايكولغوية عن اللغة العربية المنطوقة في اليمن. وقد قام الباحث بجمع أكبر قدر ممكن من البيانات من القاطنين في تلك المناطق متنوع الجغرافيا للقيام بدراسته الإيكولغوية للتحقق من فرضيات دراسته.

Limitation of the Study

This study is a comparative ecological linguistic study, at the phonological level, of the plains and mountainous areas in the Republic of Yemen. The green area on the map represents the plains / coastal area. It extends from the Saudi Arabian border on the Red Sea in the north to the Arabian Sea in the south , and goes to the border of Oman in the east (see map 1). The western mountainous area extends from Saudi Arabia in the north to the coastal area in the south. This study focuses on the plains in the west. It includes the western part of the Hajjah Governorate and the entire area of the Hodeida Governorate. The mountainous area includes Sanaa, Saddah, Amran, Dhamar, Hajja ,and Al-mahweet Governorates (see map 2). The current study opens the door to researchers to apply this phenomenon to other geographical areas in other countries.



Map 1



Map 2

1- Theoretical Background

The term "ecology" is derived from the Greek word "oikos," which refers to the family residence. It has link to planet earth because it is where people live (Fountain and Sweeney 1985). In Arabic, ecology means any piece of land that is suitable for human beings to live on. Suitability signifies the physical, psychological and emotional compatibility of a man with his environment (Ibn Manzoor 1981). Ecology is the science that studies the mutual relationship between creatures and their geography. Geography includes rivers, seas, deserts, jungles, mountains and, ultimately, the whole earth (Fountain and Sweeney 1985). Wendel (2005: 51) defines ecology "The ecological approach to language considers the complex web of relationships that exist between the environment, languages, and their speakers." "Environment" here means the physical, biological AND social environments. Most of the Eco- linguists like (Fill & Mühlhäusler, 2001; Mufwene, 2001; Mühlhäusler, 1996) have the same or specific definition and sub-categories for the term Eco linguistics. Mühlhäusler (1996:270) said that Linguistic diversity "reflects thousands of years of human accomm-odation to complex environmental conditions. Haugen (1972:323) noted, language ecology may be defined as the study of interactions between any given language and its environment. Environmental linguists believe that the language and environment are interconnected, which means that the language makes the world, and the environment around us makes the language.

The term “ecology of language,” or “eco-linguistics,” was coined by Einar Haugen in 1970. It studies the relationship between language and the environment, or ecology. Any interaction between language use and the environment is included under the term eco-linguistics (Haugen 2001). The connection between human behavior and nature has been established since time immemorial. In all environments, there is, to a great extent, harmonization of man and nature, which is why man is described as “the son of his environment”. For Haugen, 'the ecology of language' focuses on the study of the intertwined relationship between languages in the human mind on one hand and in the multilingual community on the other. Since then a special branch of applied linguistics, named Eco linguistics, has developed in which the connection between language and ecology has been established in a variety of ways and by using a multitude of methods and approach

Going beyond individuals, the environment bears upon society as a whole as well. The man automatically adapts to whatever happens in the environment and any changes that occur within it. When a person reacts to changes in the environment, this reaction spreads to the whole community and back again to the individual, making it a dynamic, two-way process.

The geographical features of a land are clearly reflected in the behavior of its inhabitants, and vice versa. For example, the geographical features of mountainous areas are harsh and complicated. A prerequisite for living there is having sturdy physical attributes to match the surroundings. The more mountainous and harsh the geographical features of an area, the more exacting living under those conditions becomes. To survive, man builds houses from rock, eats energy-rich foods, and develops a resistant and powerful body. In contrast, the plains are not nearly as exacting in their requirements. The people who live there construct houses from cane and engage in simple activities in response to the much simpler ecology of their environment.

Clothing provides an interesting example of the way man interacts with, and responds to, his ecology. In mountainous areas, people wear heavy clothes comprised of many parts for the sake of protecting themselves from severe weather, whereas on the plains light clothing comprised of fewer parts suffice since the temperate weather tends to be virtually the same year-round. In short, the man provides his environment with what it needs in return for a peaceful and comfortable life. This balance between man and his ecology is predicated on reciprocal modification. Language is one of the activities man brings to bear on the environment, and each particular environment, in turn, gives rise to a distinct dialect reflecting its unique geographical features.

There are crucial biological and ecological factors that affect the linguistic forms of people. Every person has his unique ecological linguistic forms. When he moves to another environment he tries to change these forms in order to make himself understood and cope with his new linguistic surroundings. Sapir (2014) maintained that it is the vocabularies of

languages that reflect the physical and social environments of their speakers. He added that linguists have to move beyond describing language in terms of the systems of phonology, morphology, syntax and semantics to establishing an intertwined relationship between language and the geographical features of the environment. By "physical environment" is meant the topographical features, whether they be coast, valley, plain, plateau, mountain, climate, amount of rainfall or mineral resources of the region. The social environment includes the human forces that mold the life of the individual, such as religion, ethical standards and politics (ibid)

As a result of this environmental classification, language is included in, and materially influenced by, the geographical background of its speakers. For example, the objects of the physical environment existed long before language came into existence. The inhabitants use sounds and words to name these objects. We can understand the features of the physical environment and the characteristics of the culture of the people through their linguistic forms. Therefore, the vocabularies clearly carry the stamp of the physical environment in which the speakers are placed. The linguistic items for coastal areas tend to be related to the ocean. Common items are "marine animals", "vertebrates", "invertebrates" and "fisher folk". In contrast, the inhabitants of plateaus use a form of language suited to the topography of that area, such as "ledge," "valley," "hollow," "knoll" and "canyon". Humboldt (1999) stated that it is commonly known that the languages of people affect their cultural views and non-linguistic behaviors, including their opinions about certain issues. He suggested that languages display the spirit of each nation.

The ecology participates, to some extent, in forming the culture of nations. Culture and language are inseparable. Hamers and Blanc (1989: 106) declared that "each cultural group possesses a unique non-verbal behavioral repertoire inseparable from the language". This supports the notion that a person's behavior varies according to the language he uses. A bilingual person has bi-cultural competence as well as bilingual competence. He is identified with both cultures and is perceived according to the languages he uses. Each language creates certain concepts in the mind of the bilingual speaker, which are activated while speaking one of the two languages (Haugen 1972). Khryapche (2013) pointed out that language and its implications affect a person's attitude. Language constructs our behavior to a great extent and, similarly, the environment is affected by our mother tongue. Within a language, there are different dialects which are formed according to the ecological distance between populations. These geographical variations make languages vivid and alive. Each group of people living in a specific geographical area is characterized by having both intra-linguistic and extra-linguistic features, and these features directly or indirectly reflect the group's geographical features.

The environment has a great influence on the individual as well as on groups within a society. When a person reacts to a change in the environment, this reaction ultimately spreads to the whole of society. The whole society then tries to accommodate the different features of the environment. Part of this

process of accommodation is to select the language forms most suited to the environment. If the geography of the environment is simple, the common linguistic forms tend to be simple. Conversely, if the environment is harsh, the common linguistic forms tend to reflect this. Geographical changes immediately result in linguistic changes.

Each geographical area is characterized by linguistic forms which are not used in other areas. The linguistic forms of the inhabitants of desert areas are different from those who live in mountainous areas, and people living in coastal areas use a form of language different from that used in mountainous areas. Arab linguists have studied and confirmed this as fact. They established a strong correlation between linguistic variation and geographical change. Aljerjani (1966), in his book (Alwasattah), has added greatly to the body of knowledge in this regard. He stated that the topography of desert areas is harsh and dry, and the life activities complicated. Consequently, those who live there use linguistic forms that reflect the harshness and toughness of their ecology. Aljerjani added that those who live in simple and undemanding geographical areas tend to use a form of language which is simple and soft.

2- Practical Study

As mentioned above, people are so intimately connected to their environment that there is a mutual influence between them and their environment. Since language is a human activity, it stands to reason that it bears upon the environment along with the nonlinguistic influences. To investigate the idea of "simplicity and harshness of geography and their impact on linguistic variation", the researcher collected as much data as possible from both geographical areas (mountains and plains/coast). He then made an analysis of the data collected at the phonological level to test whether this phenomenon is provable.

2.1. Forms of article (the, ال) in both areas :

Plain/ coastal area		*mountainous area*		
امكمبيوتر	*emcamputer*	!"#$%&'	*Alcamputer*	*(the computer*
امليل	Emlail	اليل	Alail	(the night)
امسماء	Emsama	السماء	Asamaa	(the sky)
امطبخ	Emetbakh	المطبخ	Almetbakh	(the kitchen)
امدرسه	Emadrasah	المدرسة	Almadrasah	(the school)
امسجد	Emasjed	المسجد	Almasjed	(the mosque)
امسياره	Emsayarah	السيارة	Assayarah	(the car)
امجوال	Emjawal	الجوال	Aljawal	(the cell phone)
امطريق	Emtareeq	الطريق	Attareeq	(the road)
امبيت	Embait	البيت	Albeit	(the house)
امقلم	Emqalam	القلم	Alqalam	(the pen)
امحياة	Emhayah	الحياة	Alhayah	(the life)
اميمن	Emyemen	اليمن	Alyemen	(Yemen)
امباب	Embab	الباب	Albal	(the door)

Figure (1)

In Modern Standard Arabic, the article (the, ال) is a prefix that appears only with nouns. However, geographical variations create two different allophones for the same phoneme.

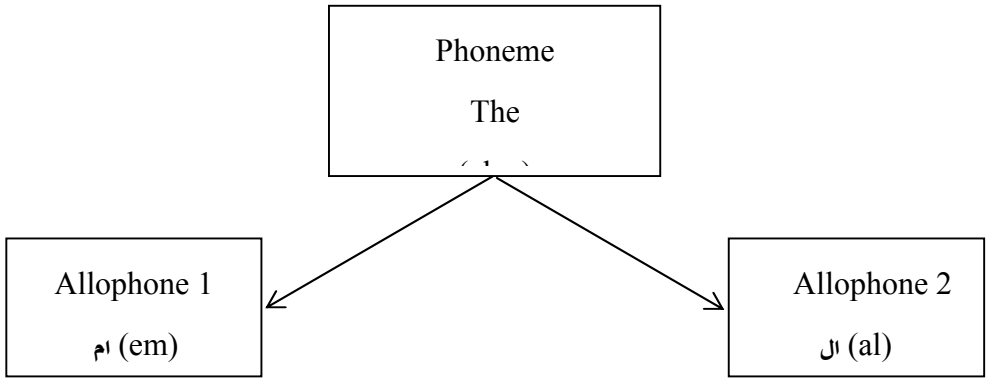


Figure (2)

According to the above data which is randomly chosen, it is clear that the inhabitants of plain areas pronounce the article *)(, the)* as *(+(em)* in all word classes (*emcamputer, emlail, emsama, emetbakh, emadrasah, emasjed, emsayarah, emjawal, emtareeq, embait,emqalam, emhayah, emyemen, embab)*. The /al/ article is more difficult to pronounce than */em/,* because */em/* contains the */m/* sound which is / *bilabial, voiced* and easy to pronounce. It is also the first sound a child learns to produce because two of his senses, eyes and ears, observe the way it is produced. Since it is simpler than *(al)* and needs less energy to articulate, it is favored by plain area inhabitants. However, people living in mountainous areas pronounce the article *)(, al)* without any modification *(Alcomputer, Alail, Assamaa, Almetbakh, Almadrasah, Almadrasah, Almasjed, Assayarah, Aljawal, Attareeq, Albeit),* adhering to the model pronunciation of Modern Standard Arabic. The /*l*/ sound is by nature lateral, voiced and needs more energy to articulate in comparison to the /m/ sound.

A second reason for the choice of /em/ over /al/ is that the vowel sound /e/ in the article (,+(, *em*) is naturally easier to pronounce than its counterpart /a/ in the article /al/. Phonologically, the sound /a/ is *open*, whereas /e/ is *half closed*. The */a/* sound requires much more energy than /e/ during pronunciation, and for this reason the Tuhami people prefer using the less demanding article /*em*/ to /*al/*.

The article *(am, el)* occurs initially in all words. It does not occur medially or finally.

2.2. Replacement of (ذ , ث =th) with (د =d or ت= t)

The sounds /ð,,- / and / θ, ، / require more energy to pronounce. They are *dental, fricatives, voiced/ voiceless*. The tongue is moved forward to a position between the upper and lower teeth. The Tuhami people find these sounds problematic and therefore mostly use the /d/ sound instead *(yedaker, toop, telj, dubab, darrah, kawter, dahab)*. The / ,/ , *d*/ sound is /*alveolar, voiced, stop*/, which requires less energy and is easier to pronounce than the ones above. In contrast, people in mountainous areas tend to use the /,- / and / ، /sounds normally *(Yethaker, Thoop, Thelj, Thubab, Tharrah, Kawther, Thahab)*. Here is some of the data collected to illustrate this phenomenon.

Plain area		***mountainous area***		
يداكر	Yedaker	يذاكر	Yethaker	(study)
توب	Toop	ثوب	Thoop	(dress)
تلج	Telj	ثلج	Thelj	(ice)
دباب	Dubab	ذباب	Thubab	(flies)
دره	Darrah	ذره	Tharrah	(atom)
كوتر	Kawter	كوثر	Kawther	(pure water)
دهب	Dahab	ذهب	Thahab	(gold)

Figure (3)

The replacement of (ذ , ث =th) with (د =d or ت= t) occurs in all positions (initially, medially and finally).

2.3. Replacement of (ع, ʕ) with (أ, ʔ)

The *(ʕ, 0)* sound is / *voiced, pharyngeal, fricative*/, and pronouncing it naturally requires much energy. The people residing in Tuhama (a plain area) do not pronounce it as a voiced pharyngeal fricative since for them the glottal stop is much easier to produce than the pharyngeal sound. They use the glottal stop sound (ʔ, أ) in words such as *(ʔli, ʔelm, Mʔrefah, ʔwdaʔ, WajaʔMerjeʔ, Mʔlomat, MosaʔdahMaʔbadm, MeʔyarMʔlomat, MosaʔdahMaʔbadm, MeʔyarMʔlomat, MosaʔdahMaʔbadm, MeʔyarMʔlomat, MosaʔdahMaʔbadm, MeʔyarMʔlomat, MosaʔdahMaʔbadm, MeʔyarMʔlomat, MosaʔdahMaʔbadm, MeʔyarMʔlomat, MosaʔdahMaʔbadm, MeʔyarMʔlomat, MosaʔdahMaʔbadm, MeʔyarMʔlomat, MosaʔdahMaʔbadm, MeʔyarMʔlomat, MosaʔdahMaʔbadm, Meʔyar)*, as an alternative to the sound *(0, ʕ)*. In contrast, the residents of mountainous areas do not exhibit this behavior. They use (*0, ʕ*) normally, as in the words *(ʕli, ʕlem , Mʕrefahmʕarekawdaʕ, wajaʕ , merjeʕ* M?lomat, M?lomat, Mosa?dah, Ma?bad, Me?yar). Here is some of the data collected to illustrate this.

Plain area		*mountainous area*		
ألي	?li	علي	ʕli	(Ali)
الم	?lem	علم	ʕlem	(Science)
مأرفه	M?refah	معرفه	MʕrefaH	(Knowledge)
مأرك	M?arek	معارك	mʕarek	(Battle)
اوداأ	?wda?	اودع	awdaʕ	(Deposit)
وجأ	Waja?	وجع	wajaʕ	(Pain)
مرجأ	Merje?	مرجع	merjeʕ	(Reference)
مالومات	M?lomat	معلومات	mʕlomat	(information)
مسائده	Mosa?dah	مساعده	mosaʕdah	(help)
مابد	Ma?bad	معبد	ma ʕbad	(temple)
مايار	Me?yar	معيار	me ʕyar	(standard)

Figure (4)

The Replacement of (ع, ʕ) with (أ , ?) occurs initially, medially and finally in all words.

2.4. Sound Reduction

The people of plain areas omit some sounds from words, whereas the inhabitants of mountainous areas do not. The word **(كانك)** is pronounced fully and distinctly by people living in mountainous areas, without omitting any sound. However, people living in coastal areas omit the glottal stop *(?)* when pronouncing it.

Similarly, the word **(13(-45)** is produced fully and completely by people living in mountainous areas, whereas people living on the plains omit the vowel sound *(a)* after *(m)*, so that the word becomes (13(756.

The word,*8491:;,) is pronounced as written by people living in mountainous areas, whereas people living in plain areas change the sound *(0)*into a glottal stop *(?)* (see 2.3.), and the sound *(l)* is deleted from the word. The form of the word thus becomes *(84<(* **)**.

People from the plains omit the sound *(h)* from the word *(17&=)*, so it becomes *(17>)*. They also omit the sound (*l*) from the word *(?%:'1)*, pronouncing it *(?0)*. See the examples below:

Plain area		*mountainous area*		
كنك	Knak	كانك	K?nak	(as if)
مذابك	mthabak	ماذابك	M athabik	(what 's wrong)
اشان	Ashan	علشان	ʕlashan	(in order to)
كذا	Ketha	هكذا	Hakatha	(like this)
له	Lmah	للمه	Lelmah	(why)

Figure (5)

2.5. Miscellaneous examples

The residents of mountainous areas tend to magnify certain sounds, using dark sounds when they occur in series. An example is the sound (ص), which is used in some words instead of the sound (س). Naturally the sound (ص) has more amplification than (س). The speakers in question say (صـلطان, مـصطرة, صـعطه, اصطورة) instead of (مسطرة, صعده, سلطان, اسطورة) respectively.

These speakers double their effort to pronounce certain sounds in some words. Tyhey sometimes pronounce sounds using both amplification and magnification ضاك) طماطيس, اضوي, التاير , فحصة, etc..). However, such amplifying sounds is not found in plain areas. The sounds د, ذ are easier to pronounce and need less effort compared to the sounds ط,ض . see the examples below;

Plain area		*mountainous area*		
صعده	Saadah	صعطه	Saddah	(city name)
ذاك	thak	ضاك	Thaak	(that)
مسطره	mastarah	مصطره	Masstarah	(ruler)
الداير	addayer	التاير	Attayer	(key)
سلطان	sultan	صلطان	Ssultan	(empire)
اسطوره	asturah	اصطوره	Assturah	(myth)
هنا	hena	هانا	Haana	(here)
ضده	theduh	ضطه	Thedduh	(against him)
امشي	amshey	اضوي	Athwey	(go)
سقط	saqat	اترب	Attreb	(fall down)
عضه	addah	قحصه	Qahssa	(bite)
خايف	khaef	بتزوط	Betzawett	(afraid)
طماط	tamat	طماطيس	Tamatees	(tomato)

Conclusion

The relationship between man and his environment is similar to the relationship between a mother and her son. The topographical variations of harshness and simplicity are clearly mirrored in human activities and behavior. Simple activities reflect a simple environment. Conversely, tough and complicated activities reflect a harsh environment, since man cannot live in an environment unless he is able to compromise in response to its difficulties and cope with its divergence. Linguistics counts among those phenomena that are subject to change according to geographical features.

Every group of people who lives in a specific geographical area is distinguished by unique linguistic forms that reflect the geographical features of the piece of land they live on. This study proves that those who live in plain areas tend to use linguistic forms characterized by being phonologically simple, and those who live in mountainous areas use sounds which are difficult and complicated. For example, the Tuhami people, who live on the plains, replace the article *(al)*, which requires more energy to pronounce, with *(em),* which needs less energy. However, those who live in mountainous areas use the article (al) unchanged.

The phenomenon of replacing demanding sounds with easier ones is clearly observed in the case of *(,- , ,. =th),* which is changed to *(,/ =d,,or ,A = t*) in plain coastal/areas. In mountainous areas people do not make this substitution. The same holds true for *(,0, ,*), which is replaced with *(,!, ?),* because the latter is easier to articulate than the former.

Sound reduction is commonly practiced among inhabitants of plain areas. They omit certain letters from words whereas their counterparts in mountainous areas don't.

Amplification and magnification of sounds are features of the speech of the inhabitants of mountainous areas. They tend to add more features to some sounds in certain words. These magnified sounds are totally absent from the speech of speakers living on the plains.

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