Inherent Intelligibility among Guragina Varieties

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Abstract

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This article examines the inherent intelligibility among six Guragina varieties, which are systematically selected to represent the major linguistic variation within this cluster of closely related dialects or languages. Three types of comparisons, lexical, phonological and morphological are used. The lexical comparison was based on 255 lexical items of frequent use and the Swadish wordlist, which is said to be change resistant. The phonological variation was established through 38 sound correspondences found in 122 words selected from the lexical comparison. The morphological comparison was based on 44 inflectional and derivational affixes. The morphemes were first described in sets and then the numbers of shared and non-shared morphemes were statistically computed. The lexical comparison provided the following result (from the Guragina variety with the highest to the lowest amount of shared vocabulary): Mesqan, Muhir, Cheha, Kistane, Welene and Inor. According to the phonological comparision, the following grouping was established: Mesqan, Muhir, Kistane, Cheha, Welene and Inor. The morphological comparision resulted in: Mesqan, Muhir, Welene, (Cheha, Kistane) and Inor. If the three groupings are combined, the following hierarchy occurs from the variety with most shared items to the variety with the least shared ones: Mesqan, Muhir, Cheha, Kistane, Welene, and Inor.

Key terms: Guragina, intelligibility, lexicon, morphology, phonology, varieties

INTRODUCTION

Gurage refers to the people and geographical area of the Gurage Zone, which is one of the Zones in the Southern Nations Nationalities and Peoples Regional State (SNNPRS). The Gurage people speak a South Ethiosemitic language called Guragina, which has twelve varieties – all spoken in the Gurage Zone. The total population of Gurage is 1,867,377 of which only 1,280,483 live in the Gurage Zone (CSA, 2007:75).

The extent in which the different Guragina varieties are intelligible is not well known. Previous studies (Gutt, 1980) and Ahland (2010) attempted to show some similarities and differences among some of the Guragina varieties. While Ahland's work included relatively large number of sample varieties, it was not comprehensive. Gutt's work compared only three languages hence being less representative. The lack of such study has hampered language planning and use in the Gurage Zone. This article aims at finding out the level of inherent intelligibility among Guragina varieties to fill in this gap.

Inherent intelligibility refers to the extent in which languages or varieties of a language are structurally similar hence can easily be understood, or are different, therefore cannot easily be understood. The study of inherent intelligibility has two main advantages. First, it shows the degree of similarity among languages thus enables to understand intelligibility levels while keeping interlingual learning and sociolinguistic variables constant. Second, it explains why some linguistic groups perform better in interlingual comprehension since degree of inherent intelligibility contributes to an interlingual comprehension.

The term **language variety** is used instead of dialect because the difference between languages or dialects of a single language is not clearly known theoretically and might be influenced by non-linguistic factors. In fact, what have been called dialects of a language based on pure linguistic criteria may turn out to be different languages or what have been different languages may be considered as dialects of a language due to political reasons, language attitude or other socio-historical factors.

MATERIALS AND METHODS

A questionnaire was used to elicit linguistic data. The data was collected in six sites representing the respective Guragina varieties: Cheha, Inor, Mesqan, Kistane, Muhir and Wolane. Two informants from each variety, i.e. a total of twelve speakers, participated in the research. The linguistic data were audio recorded and transcribed phonemically, and then analyzed and grouped into lexical lists, phonological rules and morphological affixes. To find out the levels of similarities and differences among the Guragina varieties, the lexical lists, phonological rules and the inflectional and derivational affixes were compared using descriptive statistics, mainly percentages. A rank position value was proposed to cluster the varieties from the one with the highest amount of shared items to the one with the least amount.

RESULTS

Lexical Comparison

For lexical comparison, 255 words including nouns, pronouns, adjectives, verbs and adverbs were phonemically transcribed and compared from each of the varieties Cheha, Inor, Kistane, Mesqan, Muhir and Welene. Based on the level of similarities and differences; the words are grouped into three: completely similar, partially similar and completely different.

Words are considered completely similar if they have the same consonants and vowels, such as *bet* 'house' (in Cheha, Muhir, and Mesqan). Hence, *bid* 'house' in Inor is not considered identical with *bet* in the other varieties. The words that are said to be formally similar also have the same meaning. Words with the same meaning but differ in one or two sounds, such as in *bet* and *bid* 'house' in Cheha and Inor, respectively, are considered partially similar. Sonorant alternations, such as *gunnə**n*** and *gunnə**r*** 'head', and other correspondence sets, like *ni**k'**jə* and *ni**ʔ**jə* 'big' are also considered partially similar. Words are considered completely different if they have different consonants and vowels but the same meaning, such as *neba* and *fəngəja* 'thief' in Cheha and Inor, respectively.

Completely Shared Vocabulary

The raw unshared, completely shared and partially shared lexical items, out of 255 words, were converted into percentages. The completely shared lexical items are shown in (1) below. The shared similarity between two language varieties is the value that we find at intersection point of columns and rows.

(1) Percentages of completely similar vocabularies:

IN	KS	ME	MU	WE	
49.4	27.5	59.2	49.8	13.7	**CH**
	20.8	28.2	29	12.9	**IN**
		43.1	42.7	27.9	**KS**
			57.7	18	**ME**
				20.4	**MU**

The values in (1) show that the Cheha words are largely shared by all other varieties except Welene. The shared percentages range between 13.7% (with Welene) and 59.2% (with Mesqan). The completely shared words of Cheha with Muhir (49.8%), Mesqan (59.2%) and Inor (49.4%) are nearly similar and high. Inor has less completely shared words (12.9% with Welene and 29% with Muhir) except with Cheha where it is 49.4%. Kistane shares, from the highest to the least, Mesqan (43.1%), Muhir (42.7%), Cheha (27.5%), Welene (27.9%) and Inor (20.8%). Mesqan shares words with Cheha (59.2%), Muhir (57.7%), Kistane (43.1%), Inor (28.2%) and Welene (18%). Muhir is one of the varieties whose words are shared

highly with Mesqan (57.7%), Cheha (49.8%), Kistane (42.7%), Inor (29%) and Welene (20.4%). Finally, Welene has the least commonly shared words with Kistane (25.9%), Muhir (20.4%), Mesqan (18%), Cheha (13.7%) and Inor (12.9%). Based on the commonly shared vocabulary, we can rank the varieties, from the highest to least, as *Cheha, Mesqan, Muhir, Kistane, Inor and Welene.*

Partially Shared Words

The percentage of partially shared words of the six Guragina varieties is shown in (2) below.

(2) Percentages of partially similar vocabularies

IN	KS	ME	MU	WE	
36.1	34.5	27.5	34.9	31.4	**CH**
36.1	41.2	45.9	28.6	**IN**	
24.7	27.5	21.2	**KS**		
25.5	28.6	**ME**			
26.3	**MU**				

Cheha has nearly equal partially shared vocabularies, ranging between maximum 36.1% (Inor-Cheha) and minimum 27.5% (Mesqan- Cheha). Mesqan has less partially shared words (27.5%) with Cheha because the two language varieties have many completely shared vocabularies. In fact, the two language varieties have very low completely different words as shall be discussed later. Inor has many partially shared words with most Guragina varieties, such as the maximum 45.9% (with Muhir) and minimum 28.6% (with Welene). The question is, why Inor has higher partially shared but lower completely shared vocabularies The linguistic data show that Inor is in the state of divergence phonologically. For instance, many of the ejectives of other Guragina varieties are changed into glottal stops in Inor:

Gloss	Inor	Others
‘bone’	aʔɨm	at'ɨm (in the other 5 Guragina varieties)
‘hundred’	bəʔər	bək'ɨr (CH)
‘dry’	dərəʔ	t'ərək' (CH, KS & ME)
‘short’	eʔir	aɣ'ɨr (CH, KS, ME, MU &WE)
‘leaf’	k'əʔər	k'ɨt'ər (CH, ME, MU & WE)
‘grind’	fiʔ	fiɣ' (CH, Ks, ME, MU & WE)

The ejective versus glottal stop correspondence between Inor and other Guragina varieties is often maintained in non-word initial position. There are also many other phonological variations that Inor exhibits compared to the other Guragina varieties. One such variation is in voice quality:

Gloss	Inor	Other Guragina Variety
'die'	mud	mut (CH, KS, ME, MU, WE)
'he'	hud-a	hut-a (CH)
'neck'	angəd	angət (CH, KS, ME, MU, WE)
'tongue'	anəbəd	anəbət (CH, KS, ME, MU, WE)

Here, the alveolar voiceless stop t of other Guragina varieties becomes voiced, often at word final positions, in Inor. There are also variations caused by sonorant alternation, which applies to many of the Guragina varieties. Root reduction, which results in compensatory lengthening, and nasalization of consonants which is often triggered by either nasal sound or traces of deleted nasals as in ma**ʔã** 'came' (compare from: ʧənə-m in Cheha and bəssa-m in Muhir, mət'a in Welene), are the other causes for Inor to be divergent.

Mesqan and Muhir have higher partially shared morphemes with Inor. Kistane also has the highest partially shared lexicon with Inor (36.1%) but lower with others. Welene, as it was the case in completely shared lexicons, has the least partially shared lexicons with all the five Guragina varieties.

Completely Differnt Vovabulary

The percentage of comletely different vocabulary of the Guragina varieties is displayed in (3) below.

(3) Percentages of completely different vocabularies:

IN	KS	ME	MU	WE	
14.5	38.4	13.3	15.3	55.3	**CH**
	43.1	30.6	25.1	58.4	**IN**
		32.2	29.8	52.9	**KS**
			16.9	53.3	**ME**
				53.3	**MU**

The maximum completely unshared vocabularies are observed in Welene. Almost in all cases, more than 50% of Welene vocabulary is not shared. The maximum unshared lexicon is 58.4% (between Welene and Inor), and the minimum is 52.9% (between Welene and Kistane). Next to Welene, higher completely unshared vocabularies are observed in Kistane; maximum 52.9% with Welene and minimum 29.8% with Muhir. Cheha, Inor, Mesqan and Muhir have low completely divergent lexicons. The least

(13.3%) divergence in completely different vocabularies is between Cheha and Mesqan.

What is interesting is that the lexical comparison puts Mesqan much closer to Cheha unlike the previous studies that grouped Mesqan at higher node of West Gurage languages in a family tree of Gurage language classification (cf. Hetzron, 1972: 119).

To summarize, the lexical comparision shows three relationships among the Guragina varieties; that is, highly intelligible varieties: Cheha, Mesqan, Muhir and Inor on one side; the relatively intelligible variety Kistane, and the least intelligible variety Welene. The fact that Inor has higher partially shared vocabularies with many of the varieties reveals that it is in the state of divergence. Language adaptation programs and standardization may help to level this tendency.

Clustering the Language Varieties

In order to find the cross-language relationships among Guragina varieties, a rank position value (hence forth RPV) is computed. First, the language varieties are ranked based on their percentage values as 1st, 2nd … 6th. Then, RPV are assigned. As the varieties compared are six, we shall give the maximum RPV ***6*** for the target language assuming a 100% similarity for it is compared with itself. The RPV 5 is given to a language which is the first highly similar variety to the target language or that stood second in rank order, 4, is given for the second closer language variety or to the one that stood third in rank order, etc. When two language varieties are equally similar (have the same rank order) to a language, their rank is added and then is divided into two; hence each of the two language varieties receives the result of the divided numbers. The language variety that have a rank next to the language varieties that received an equal RPV receives a third or fourth rank based on its position because the preceding two languages varieties that received equal values are considered as they have received consecutive ranks instead of a shared equal value.

The rank orders and the RPVs proposed are used to cluster the language varieties based on lexical, phonological, morphological and overall structural relationships among the Guragina varieties. For the lexical comparision, we use only the completely sharedvocabularies though the partially shared ones can also contribute for intelligibility.

The relational rank order in (4) is based on the percentages of completely shared vocabulary items.

(4) Relational rank based on completely shared vocabularies:

Target Language	Relational Rank, high to low, left to right				
CH	ME	MU	IN	KS	WE
IN	CH	ME	MU	KS	WE
KS	ME	MU	WE	CH	IN
ME	CH	MU	KS	IN	WE
MU	ME	WE	CH	KS	IN
WE	MU	KS	ME	CH	IN

A target language with a rank order of 1st mean a highest similarity whereas a rank order of 6th mean the least shared to the target language. For the purpose of getting the overall relationship instead of the relationship among a target language and its close relatives, we shall use a RPV. In a RPV, 6 mean the highest and 1 mean the least value; in other words, a RPV is the reverse of rank order in terms of degree of the similarities of the language varieties. The relational ranks based on completely shared lexicons in (4) above are converted into a RPV as in (5).

(5) RPV based on completely shared lexicons:

	CH	**IN**	**KS**	**ME**	**MU**	**WE**
CH	6	3	2	5	4	1
IN	5	6	2	4	3	1
KS	2	1	6	5	4	3
ME	5	2	3	6	4	1
MU	3	1	2	5	6	4
WE	2	1	4	3	5	6
Total	**23**	**14**	**19**	**28**	**26**	**16**

Based on the shared vocabularies, we can cluster the six languages varieties, from the highest to the least as: *Mesqan, Muhir, Cheha, Kistane, Welene and Inor*.

Phonological Comparision

The phonological comparison is based on 122 lexical items (cf. Fekede, 2013:249-250) selected from the 255 (cf. Fekede, 2013:239-248) words used for lexical comparison. The 122 words were selected because they showed systematic variations. The phonological comparison shows sounds correspondence governed by phonological rules and variations based on distributions of sounds (occurring initially, medially, finally, between vowels, etc.).

From the 122 words selected for phonological comparison, 38 phonological rules and/or distribution are used for comparisons. The raw counts of the shared phonological rules among Guragina varieties are shown in (6).

(6) Phonological similarity counts

	CH	**IN**	**KS**	**ME**	**MU**	**WE**
CH	**X**	15	19	22	21	13
IN	15	**X**	4	10	8	5
KS	19	4	**X**	27	22	22
ME	22	10	27	**X**	29	16
MU	21	8	22	29	**X**	17
WE	13	5	22	22	17	**X**

The raw counts are changed into percentages and shown in (7).

(7) Percentage of phonological similarity

IN	**KS**	**ME**	**MU**	**WE**	
39.5	50	57.9	55.3	34.2	**CH**
	10.5	26.3	21.1	13.2	**IN**
		71.1	57.9	57.9	**KS**
			76.3	42.1	**ME**
				44.7	**MU**

Cheha shares phonological similarities with Mesqan (57.9%), Muhir (55.3%), Kistane (50%), Inor (39.5%) and Welene (34.2%). Inor phonologically deviates from the other Guragina varieties; it is less shared among the compared varieties. Inor's maximum

percentage of shared phonologically similarity is 39.5% with Cheha, and 26.3% with Mesqan. Mesqan has relatively the highest shared phonological rules, except with Inor. The percentage of phonological similarities with Mesqan, from maximum to minimum, is 76.3%, 71.1%, 57.9%, 42.1% and 26.3% with Muhir, Kistane, Cheha, Welene and Inor, respectively. Kistane and Muhir as well have highly shared phonological rules. Welene, as it was the case in completely shared lexicons, has less shared phonological rules. We can better understand the phonological relationship by ranking the percentage values of each Guragina varieties as in (8).

(8) Relational ranks based on phonlology

Target language	**Relational rank order (highest to lowest from left to right)**				
CH	ME	MU	KS	IN	WE
IN	CH	ME	MU	WE	KS
KS	ME	(MU-WE)		CH	IN
ME	MU	KS	CH	WE	IN
MU	ME	KS	CH	WE	IN
WE	KS	MU	ME	CH	IN

The relation ranks of each Guragina variety against five others is changed into RPV to get the overall relationships as in (9).

(9) Rank position value matrix based on phonology:

	CH	**IN**	**KS**	**ME**	**MU**	**WE**
CH	6	2	3	5	4	1
IN	5	6	1	4	3	2
KS	2	1	6	5	3.5	3.5
ME	3	1	4	6	5	2
MU	3	1	4	5	6	2
WE	2	1	5	3	4	4
Total	**21**	**12**	**23**	**28**	**25.5**	**16.5**

Based on shared phological rules, the language varieties can be clustered, from highest to the least as: *Mesqan, Muhir, Kistane, Cheha, Welene and Inor.* This implies that Mesqan is highly similar to all the others; hence, is more intelligible linguistically. The next intelligible language variety is Muhir and then

Kistane. Cheha , Welene and Inor are the fourth, fifth and sixth intelligible vrieties, respectively.

The question is why Mesqan has most phonologically shared features across the five other Guragina varieties. Though we cannot exactly tell the cause, the linguistic data shows that Mesqan has sonorant /n/ and /l/ shared with Kistane, Muhir and Welene. It also has /r/ shared with Cheha and Inor. On the other hand, Cheha and Inor often lack /l/, which is found only in a few words, such as *ləmʧa* 'twins', for which they either use /n/ or /r/ as in *neba* for *leba* 'thief'. In other words, there is a kind of merger of /l / into / n/ or /r/ in Cheha and Inor. What is more, Mesqan, has vocabularies highly shared by the other Guragina varieties because Mesqan is geographically in contact with north Gurage (Kistane), east Gurage (Welene) and West Gurage (Muhir). It takes linguistic features from all the language varieties it is in contact with.

Comparison of Morphemes

To compare the morphemes statistically, the main inflectional and derivational affixes that are overtly shown in the six Guragina varieties are discussed. The morphemes are grouped into noun and verb affixes. The affixes are subdivided into inflection and derivation. The morphemes are based on elicitation from fields and literature including Meyer (2006), Tsehay (2008) and Alemayehu (2011).

Affixes of Nouns

Inflection affixes

Inflectional affixes show grammatical relationships**.** The inflectional affixes of nouns compared include definiteness, number and case markers.

i) Definiteness and number

Definiteness in Cheha and Inor is marked with pronominal suffixes, such as {-xɨno}; in Kistane and Welene it is marked with {-i}; and in Muhir it is marked with {-we}. The plural is not marked in Cheha, Inor and Mesqan but pronominal suffixes, such as bet-*xut* (house-3smpro) 'the house' versus bet-*xino* (house-3ppro) 'the houses', can express the notion of plural. Kistane and Welene have plural markers {-oʧ} and {-ʧə}, respectively. The examples in (10) show the definite and plural forms of nouns.

(10) **Definiteness and plural**

LangVar.	*Definiteness*	*Number*
CH	*səb-xɨno*	*səb*
	man-pro 'the men'	man 'man'/'men'
IN	*səb-xɨno*	*səb*
	man-pro 'the men'	man 'man'/'men'
KI	*səb-i*	*səb-oʧ*
	man-def 'the men'	man-pl 'men'
ME	*gərəd-i*	*səb*
	girl-def 'the girl'	'man'/ 'men'
MU	*gərəd-we*	*səb-xɨnəm*^{w}
	girl-def 'the girl'	man-3pm 'the men'
WE	*gar-i*	*səb-ʧə*
	house-def 'the house'	man-pl 'the men'

ii) Case

The nominative case in Gurage languages is shown syntactically, and the accusative case, which is {jə-} in most Guragina varieties is overt only when the object noun is definite. Therefore, we use the overtly shown morphemes, such as genitive, dative, instrumental and locative case markers for our comparison. In (11) are case markers of the six Guragina varieties:

(11) Case markers

LangVar.	*Genitive*	*Dative*	*Instrument*	*Locative*
CH	*jə-əbərga*	*jə-əbərga*	*bə-genzo*	*bə-bet (pp)*
	of-Z	to-Z	with-ax	in(on) house
IN	*ə-xuda bid*	*ə-gərəd*	*bə-wisə*	*bə-bid (pp)*
	of-his house	to- girl	with ax	Loc-house (pp)
KI	*jə-gərəd*	*jə-bajji*	*bə-makəl*	*bə-ge lalə*
	of-girl	to boy	with ax	Loc-house-on
ME	*jə-gərəd*	*jə-gərəd*	*bə-genzo*	*bə-beti (pp)*
	of-girl	to-girl	with-ax	Loc-house (pp)
MU	*jə-gərəd*	*jə-gərəd*	*bə-genʒəm*^{w}*ə*	*bə-bet*
	of-girl	to-girl	with-ax	on-house
WE	*jɨ-xetə*	*lə-nure*	*bə-gənzəmo*	*bə-gar-dər*
	of-my	to-Nure	with-ax	Loc-house-on
Gloss	'Of-NP'	'to-NP'	'with-NP'	'Loc-NP-PP'

Derivation Affixes

Noun derivational affixes including abstract, verbal noun, group identity, instrument, result and agent nominal affixes are shown in (12).

(12) Nominal derivation affixes

LangVar	*Abstract*	*Gerundive*	*G-identity*	*Instrument*	*Result*	*Agent*
CH	səb -nət	sɨbr-ot	fərəz-*ənə*	mə-ktəf-ja	mɨk-at	səf-i
IN	səb -nəd	ə-swɨrt	ə-fərəzjə	mə-kətəfə-ja	mɨk-at	səf-i
KI	səb -nnət	wə-sbɨr	fərəz-əŋŋə	wo-ktɨf-ja	mɨk-at	səf-i
ME	səb -nnət	wə-sbɨr	fərəz-əŋŋə	mə-ktəf-ja	mɨk-at	səf-i
MU	səb -nnət	wə-sbɨr	fərəz-əŋŋə	wə- ktəf-ja	mɨk-at	səf-i
WE	miʃ-nət	sɨbər-ot	fərəz-əŋə	mə-fʧa	mɨk-at	səf-i
	man-hood			‘opener’		
Gloss	‘humanity’	‘breaking/ to break’	‘horseman’	‘instrument to chop with’	‘problem’	‘tailor’

Abstract nominal is derived with {-nət} but the morpheme initial /n/ is geminated in Muhir, Mesqan and Kistane, and the morpheme final /t/ becomes /d/ in Inor. Verbal noun is derived with {-ot} in Cheha and Welene, {wə-} in Kistane, Mesqan and Muhir and {ə-} in Inor. Kistane further derives gerundive nominal with {–a}: wəzəl-a ‘working’; səbər-a ‘breaking’; t’ərəg-a ‘sweeping’ (Tsehay, 2008:80). Group identity nominal is derived with {-əŋŋə} in Kistane, Mesqan, Muhir and Welene (ŋ is degeminated in Welene), and with {-ənə} in Cheha. Inor uses {ə-} to derive group identity nominal.

Affixes of Verbs

Inflection Affixes

The verb inflection affixes compared include past, present and future tense markers, imperative and jussive. What is more, negation of verbs in different tenses and moods are discussed in (13).

(13) Tense and mood affixes

Lang Var	*Past*	*Present*	*D-future*	*Ind-future*	*Imperative*	*Jussive*
CH	*səpərə-m* he broke	*ji-səbir* he breaks	*ji-səbir-te* he will break	*ji-sbir-ʃə* he may break	*sibir* break	*jə- sbir* let him break
IN	*səpərə̃* he broke	*ji-səbir* he breaks	*ji-səbir-k^{w}e* he will break	*ji-sbir-se* he may break	*sibir* break	*ə- sbir* let him break
KI	*səbbərə* he broke	*ji-səbir-u* he breaks	*ji-səbir-jən-* he will break	*ji-səbir* jikonu he may break	*sibər-* break	*jə- sbir-* let him break
ME	*səbbərə* he broke	*ji-səbr-* he breaks	*ji-səbur-ew* he will break	*ji-səbur-ew* he may break	*sibur* break	*jə- sbur-* let him break
MU	*səbbərə-m* he broke	*ji-səbir-u* he breaks	*ji-səbr-ətn-* he will break	*ji-səbr-ətn-* he may break	*siwir* break	*jə- swir-* let him break
WE	*səbərə-* he broke	*ji-səbr-an* he breaks	*li-səbr-in-* he will break	*li-səbr-əjnon* he may break	*sibər-* break	*jə- sbər-* let him break

The morpheme {-m} is considered as past marker and occurs in Cheha and Muhir with affirmative forms of verbs. In Inor the {-m} is often deleted but surfaces in some carful speech. The deleted {-m} leaves its traces and nasalizes any vowel occurring in a word final position. The third person singular marker of imperfective is {ji-}, which becomes {li-} in Welene in future tense forms. The definite future markers are {-te} and {-k^{w}e} in Cheha and Inor, respectively. The indefinite future is marked with {- ʃə} in Cheha and {-se} in Inor. Mesqan and Muhir do not distinguish definite and indefinite future forms. Kistane and Welene use auxiliary verb jikonu and -əjnon 'may', respectively to express indefinite future.

The imperative form does not have an affix but is shown by internal modification of vowels. Thus, we have $C_1iC_2iC_3$ in Cheha, Inor and Muhir; $C_1iC_2əC_3$ in Kistane and Welene; and $C_1iC_2uC_3$ in Mesqan (where C refers to a consonant and the subscript numbers indicate the consonants are not identical). The jussive form has {jə-} in all the Guragina varieties compared except in Inor where it is {ə-}.

The negative markers in the past, present future, imperative and jussive are compared as in (14):

(14) Negative affixes

LangVar	***Past***	***Present***	***Future***	***Imperative***	***Jussive***
CH	*an-səpər-ə-*	*e-səbɨr*	*e-səbɨr*	*at-sɨbɨr*	*e-sbɨr*
	he didn't break	he doesn't break	he won't break	don't break	let him not break
IN	*an-səpər-ə-*	*aj-səbɨr*	*aj-səbɨr-ka*	*at-sɨbɨr*	*aj-sɨbɨr*
	he didn't break	he doesn't break	he won't break	don't break	let him not break
KI	*al-səbbər-ə-*	*aj-sbər*	*t-səbɨr*	*at-ɨ-sbər*	*aj-sbər*
	he didn't break	he doesn't break	he won't break	don't break	let him not break
ME	*an-səbor-ə-*	*e-səbur*	*e-sbur*	*at-ɨ-sbur*	*e-sbur*
	he didn't break	he doesn't break	he won't break	don't break	let him not break
MU	*an-səbbər-ə-*	*e-səbɨr*	*e-swur*	*at-ɨ-swɨr*	*e-sbɨr*
	he didn't break	he doesn't break	he won't break	don't break	let him not break
WE	*al-səbər-*	*aj-səbər-*	*ɨl-səbɨ*	*at-sbər*	*aj-ɨ-sbər-*
	he didn't break	he doesn't break	he won't break	don't break	let him not break

The negative marker in the past is {an-} in Cheha, Inor, Mesqan and Muhir; it is {al-} in Kistane and Welene. In present, negative affix is {e-} in Cheha, Mesqan, and Muhir; it is {aj-} in Inor, Kistane and Welene. The negative in the future tense becomes much different: {e-} in Cheha, Mesqan and Muhir (similar to the present negative form), {aj-} in Inor, {t-} in Kistane and { ɨl-}in Welene. In imperative form, all the language varieties use the same form {at-}. The negative form in jussive is the same as the negative in the present tense form in all the six language varieties.

Derivation Affixes

The verb derivation affixes compared are causative, double causative (also called causative of causative), passive and frequentative. In (15) are examples of verb derivations.

(*15) Verb derivation affixes*

LangVar.	***Causative***	***Double causative***	***Passive***	***Frequentative***
CH	*a-ʧəfər-ə-m*	*at-ʧafər-ə-m*	*tə-ʧəfər-ə-m*	*at-ʧiʧəfər-ə-m*
	he fed	he caused to feed	it is fed	he fed again & again
IN	*a-ʧəfor-ə-*	*at-ʧafor-ə-*	*tə-ʧəfor-ə*	*at-ʧiʧafor-ə*
	he fed	he caused to feed	it is fed	he fed again & again
KI	*a-tekəm-ə-*	*at-tkakəm-ə-nə-*	*tə-tekəm-ə-mu*	*at-tekakəm-ə-mu*
	m	*mu*	it is fed	he fed again & again
	he fed	he caused to feed		
ME	*a-ʧəkəm-ə-*	*at- ʧakəm-ə-m*	*tə-ʧəkəm-ə-m*	*at- ʧiʧəkəm-ə-m*
	m	he caused to feed	it is fed	he fed again & again
	he fed			
MU	*a-ʧəfər-ə-m*	*at-ʧafər-ə-m*	*tə-ʧəfər-ə-m*	*at-ʧiʧafər-ə-m*
	he fed	he caused to feed	it is fed	he fed again & again
WE	*a-xərət-ə-*	*at-xrarət-ə*	*tə-xrarət-u*	*a(t)-xrarət-ə-*
	he fed	he caused to feed	it is fed	he fed again & again

In the derivation of verbs, the six Guragina varieties have more uniform affixes. The causative marker is {a-}; the double causative is {at-}; the passive is {tə-} and the frequentative is {at-} plus reduplicating the second radical of a word.

SUMMARY

So far, we have seen a brief description of the inflectional and derivational affixes of Guragina varieties. Now, we quantify the morphemes and find out the extent the Guragina varieties share or do not share the morphemes. A number *1* represents that a language has a particular morpheme and *2* to show that a particular language does not have a particular morpheme. Thus, if two language varieties have both *1* and *1*, we call it '*we have'*, that is, the two varieties possess that morpheme; if two language varieties have *2* and *2*, we call it '*we do not have'*, that is, both language varieties lack that morpheme; if two languages have *1_2* or *2_1*, we call it '*I have- you do not have'*, that is, when one language has a particular morpheme, the other language variety lacks that same morpheme.

We consider '*we have*' and '*we do not have*' are the shared values for two language varieties because they either have or do not have the morpheme in common. The '*I have - you do not have*' is the difference that two languages do not share because when one language has *1* (*I have*) the other variety has *2* (*I do not have*). The number of '1', '2' and '1_2/2_1' shared between two varieties is shown in (16).

(16) The shared or not shared 1's, 2's and 1_2/2_1's

We shall first merge '*we have'* and '*we do not have'* (the communality between two languages) and then compare it with '*I have-you do not have'* as in (17).

(17) Shared and unshared morphemes among Guragina varieties

Language Pairs	***1=We have***	***2=We do not have***	***1_2/2_1=I have- you do not have***	***Total***
CH-IN	11	12	21	44
CH-KS	13	12	19	44
CH-ME	17	19	8	44
CH-MU	18	18	8	44
CH-WE	13	13	18	44
IN-KS	11	11	22	44
IN-ME	12	15	17	44
IN-MU	12	13	19	44
IN-WE	12	13	19	44
KS-ME	15	16	13	44
KS-MU	16	15	13	44
KS-WE	17	16	11	44
ME-MU	19	21	4	44
ME-WE	14	16	14	44
MU-WE	14	14	16	44

Language Pairs	*We have & we do not have (1 & 2)*	*I have- you do not have (1_2/2_1)*	*Total*
CH-IN	23 (52.27%)	21 (47.72%)	44 (100%)
CH-KS	25(56.81%)	19(43.18%)	44(100%)
CH-ME	36(81.81%)	8 (18.18%)	44(100%)
CH-MU	36(81.81%)	8(18.18%)	44(100%)
CH-WE	26 (59.09%)	18 (40.9%)	44(100%)
IN-KS	22 (50%)	22(50%%)	44(100%)
IN-ME	27(61.36%)	17(38.63%)	44(100%)
IN-MU	25(56.81%)	19 (43.18%)	44(100%)
IN-WE	25(56.81%)	19(43.18%)	44(100%)
KS-ME	31(70.45%)	13(29.54%)	44(100%)
KS-MU	31(70.45%)	13(29.54%)	44(100%)
KS-WE	33 (75%)	11(25%)	44(100%)
ME-MU	40 (90.9%)	4 (9.09%)	44(100%)
ME-WE	30 (68.18%)	14 (31.81%)	44(100%)
MU-WE	28 (63.63)	16 (36.36)	44(100%)

In (17) the raw shared count and its percentage (a value in parenthesis) is shown. As the unshared morphemes do not contribute for intelligibility, we compare only the shared morphemes to show the relative similarities and differences among the Guragina varieties. The matrix in (18) shows the percentages of shared morphemes more clearly.

(18) Shared morphemes among six Guragina varieties:

IN	**KS**	**ME**	**MU**	**WE**	
52.27	56.81	81.81	81.81	59.09	**CH**
	50	61.36	56.81	56.81	**IN**
		70.45	70.45	75	**KS**
			90.9	68.18	**ME**
				63.63	**MU**

In (18), we can see the relative similarity of a language variety against the other five language varieties. For example, Cheha shares maximum morphemes with Muhir and Mesqan (81.81% each), Welene (59.09), Kistane (56.81) and Inor (52.27). Muhir shares more morphemes with all the varieties: Mesqan (90.9%), Cheha (81.81), Kistane (70.45%), Welene (63.63%) and Inor (56.81%). Mesqan's morphemes, like the Muhir's, are highly shared by the majority of Guragina varieties: Muhir (90.9%), Cheha (81.81%), Kistane (70.45%) ,Welene (68.18%) and Inor (61.36%). Kistane's morphemes are relatively well shared by Welene (75%), Mesqan and Muhir (70.45 % each), and relatively less shared by Cheha(56.81%) and Inor (50%). Welene's morphemes are on averaged well shared. It has higher shared morphemes with Kistane (75%), Mesqan (68.18), Muhir (63.63%), Cheha (59.09%) and Inor (56.81%). Inor shared relatively less morphemes with all the five language varieties: Mesqan (61.36), Muhir and Welene (58.81% each), Cheha (52.27%) and Kistane (50%).

To find the distance among the language varieties based on the shared morphemes, we rank their percentage value and then label their RPV as in (19).

(19) Relations of language varieties to a target language with a RPV

Target language	*Language varieties closer to target language (left to right)*	*Rank Position Value (RPV)*					
CH	(MU-ME)-WE-KS-IN	6	4.5	4.5	3	2	1
IN	ME- (MU- WE)-CH-KS	6	5	3.5	3.5	2	1
KS	WE- (ME –MU)-CH -IN	6	5	3.5	3.5	2	1
ME	MU-CH- KS -WE-IN	6	5	4	3	2	1
MU	ME- CH- KS- WE-IN	6	5	4	3	2	1
WE	KS-ME-MU-CH-IN	6	5	4	3	2	1

To find the center of all the language varieties from which each of the language varieties may access morphological information at different levels, we shall arrange the RPV as in the matrix in (20).

(20) A 6- by- 6 matrixes RPV

	CH	*IN*	*KS*	*ME*	*MU*	*WE*
CH	6	1	2	4.5	4.5	3
IN	2	6	1	5	3.5	3.5
KS	2	1	6	3.5	3.5	5
ME	4	1	3	6	5	2
MU	4	1	3	5	6	2
WE	2	1	5	4	3	6
Total	*20*	*11*	*20*	*28*	*25.5*	*21.5*

Morphology makes Mesqan the center of all the Guragina varieties. Its morphemes are shared nearly by all the sample groups in a better way. It is the first highly shared language variety to Cheha, and Muhir. It is the second most shared language variety to Inor, Kistane and Welene. The inherent intelligibility based on morphology, from high to low, is: *Mesqan, Muhir, Welene, (Cheha, Kistane) and Inor*. As some of the language varieties differ only slightly in terms of morphology, we can regroup them as in the Figure 3.

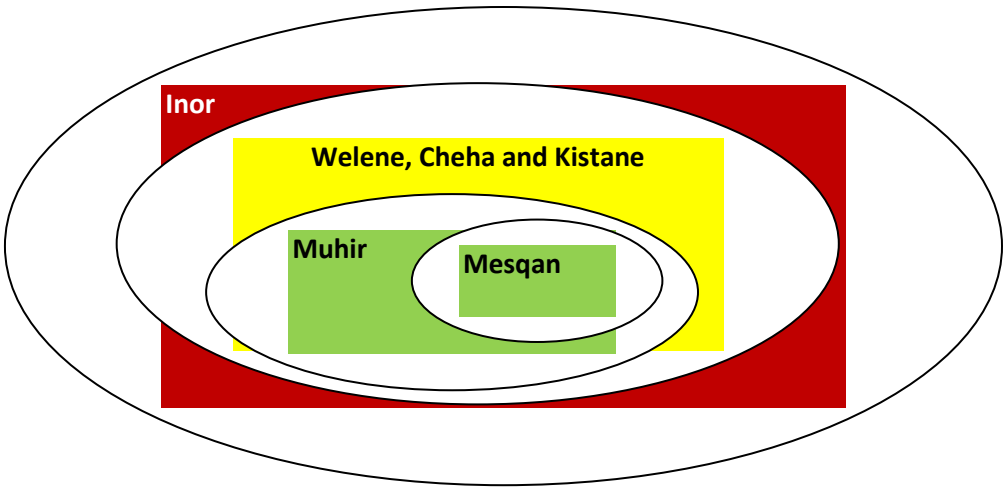

Figure 1. Cross-language relationship based on shared morphemes.

The language variety in the inner circle, Mesqan, is the center of all the other five Guragina varieties based on morphostatistics. Information from the center to the language area in the second inner circle (Muhir) can be more accessible compared to the language areas in the third circle (Welene, Cheha and Kistane) and in the fourth or the outer circle (Inor).

Overall Structural Relations

The overall structural relationships based on **lexicon**, **phonology** and **morphology** among the Guragina verities are aggregated in (21).

(21) Relative ranks in three categories

Category:	**Language varieties(from high to low similarity):**
Lexicon	Mesqan, Muhir, Cheha, Kistane, Welene and Inor.
Phonology	Mesqan, Muhir, Kistane, Cheha, Welene and Inor
Morphology	Mesqan, Muhir, Welene, (Cheha, Kistane) and Inor.

The RPV for the above structural categories is summarized as in (22).

(22) Structural similarities among Guragina varieties

Category	***RPV of each category***						
	CH	IN	KS	ME	MU	WE	*Total*
Lexicon	23	14	19	28	26	16	126
Phonology	21	12	23	28	25.5	16.5	126
Morphology	20	11	20	28	25.5	21.5	126
Total	*64*	*37*	*62*	*84*	*77*	*54*	*378*

The overall structural similarity, from highly to less shared, groups Guragina varieties as: *Mesqan, Muhir, Cheha, Kistane, Welene, and Inor.* Two Guragina varieties, Mesqan and Muhir, can be grouped together as a highly shared varieties that may be intelligible each other and to all the other Guragina varieties. Cheha and Kistane can fairly be grouped together as the second intelligible varieties. As the gap between Welene, sum of RPV 54, is wider than that of Inor, sum of RPV 37, the two languages cannot be categorized into the same group. Therefore, we can group, as shown in the Figure 3.2, the six Guragina varieties as: *Mesqan and Muhir, Cheha and Kistane, Welene, and then Inor,* from highest to least intelligible groups, respectively.

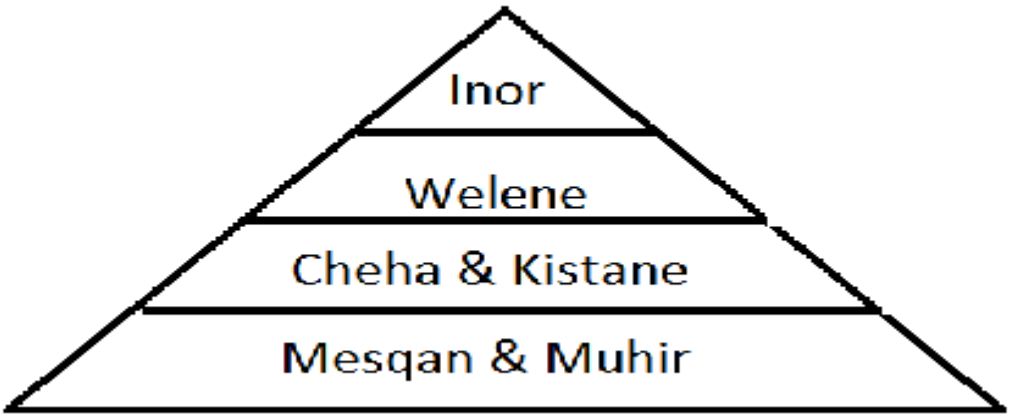

Figure 2: Overall inherent intelligibility among Guragigna Varaities

CONCLUSION

In this article, we have discussed inherent intelligibility among six Guragina varieties based on lexicons, phonological rules and morphemes shared among six Guragina varieties. The comparison showed that Mesqan, Muhir, Cheha, Kistane, Welene and Inor are shared from the highest to the least, respectively among the six Guragina varieties speakers. The present finding confirms the (Gutt, 1980) findings with regard to less intelligibility between Kistane and Cheha. It, however, differs from Hetzron (1972) by grouping Mesqan genetically closer to Muhir and Cheha than to other West Guragina varieties.

This study provides very good means for language choice and use in the Gurage Zone. However, further research on intelligibility test, sociological survey on in-group and out-group relationships, the way each groups identify themselves and the historical ties among different Guragina speakers is required. This has to be compared against the structural similarities and differences to make decisions on language use for various purposes including local mass media, mother tongue education, and court in the Gurage Zone.

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