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The Annual Proceedings of the Berkeley Linguistics Society is published online via eLanguage, the Linguistic Society of America's digital publishing platform.
How Recent Contact Erased Ancient Traces in the Gender Systems of the Oromo Dialects
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In one respect, the gender systems of western and central dialects of Oromo, a Lowland East Cushitic (LEC) language, are less like the gender systems of other Oromo dialects and also other LEC languages, and more like those of non-LEC Cushitic and Semitic languages. In yet another way, the gender systems of the westernmost dialects are less like those of other Oromo dialects and other Cushitic languages altogether, and more like those of Semitic and Omotic languages. The position of Oromo within the Afroasiatic family is identified in Figure 1.

Figure 1

I argue that the variations in the different dialects resulted from contact of the western Oromo communities with distant relatives, and that reconvergence was supported both by attitudes of cultural identity and agencies that fostered social integration. Within the Le Page and Tabouret-Keller (1985) model, spoken language projects a speaker's world view onto a social screen of two or more individuals. Social factors serve to focus a set of language norms within certain overlapping social groups, or blur them across other social groups. Both institutions fostering social integration and cultural attitudes of identity have been identified as focusing factors in other sociolinguistic contexts (Tabouret-Keller 1992).

In the eastern and the southern dialects of Oromo, the assignment of gender is based on phonological features as well as semantic and pragmatic factors. This is also true in other LEC languages. In the western dialects, on the other hand, only semantic and pragmatic information is relevant in gender assignment, as in non-LEC Cushitic, Semitic, and Omotic languages. Expressions with initial $i$ feminine and initial $k$ masculine alternants are characteristic of Cushitic.
languages. In the eastern and southern Oromo dialects there is a robust $t/k$ paradigm, but the westernmost dialects have only $k$ initial forms.

I argue in this paper that both of these differences reflect simplifications in the western varieties, and further, that these changes occurred under pressure of language contact: the simplification in the assignment system because of contact of Tulama and Mecha speakers with speakers of languages having semantically transparent gender systems, and the generalization of initial $k$ in the $t/k$ paradigm because of further contact of Mecha speakers with speakers of Semitic and Omotic languages, which do not have $t/k$ paradigms. Because Oromo became an important language for large groups of native speakers of non-LEC Cushitic and Semitic languages who were assimilated into the center of the Oromo community, the opaque phonological basis for gender assignment was replaced with a transparent semantic basis. Further assimilation of Omotic speakers finally led to the neutralization of the $t/k$ paradigm in the westernmost dialects.

1. Northwestern Migration of the Oromo People. In the 16th century, ancestors of the modern Tulama and Mecha, nomadic Oromo, embarked on a migration that took them to the north and west of their homeland in the southeastern highlands of Ethiopia (Lewis 1966, Hassen 1990). This excursion carried them through areas that had remnant populations of Highland and Central Cushitic, Semitic and Omotic peoples. They moved northward into the area of modern Shoa, which was at the time dominated by Amhara. The Mecha separated from the Tulama and migrated to the west and southwest. Figure 2 shows the relative geographic location of the modern Oromo dialects, and neighboring speech communities.

![Figure 2](image-url)
Hassen (1990:18ff) argues that two social factors facilitated this migration. The first is the political situation in the area at that time, and the second is the store of cultural attitudes and customs of the Oromo that fostered assimilation of outsiders into their group. The jihad of Imam Ahad (1529-1543) and the subsequent retaliation of the Christian emperor Galadewos (1540-1559) disrupted the political and economic situation to the north and west of those lands occupied by these Oromo nomads. These areas were ravaged by war, famine and heavy slave raiding that financed both factions in the conflict. Much of the population was destroyed or dispersed, both among the more sedentary agriculturally based Oromo and also among the other ethnic communities of the area. Before order could be restored by either Christian or Moslem factions, the nomadic Oromo community had pressed northward and established dominance in the area. The Tulama settled permanently in the region centered around modern Finfine (Addis Ababa) while the Mecha moved further to the west.

Oromo attitudes of cultural identity and institutions of group and individual adoption supported the absorption of peoples from the diverse language groups encountered by the Tulama and Mecha. Among the Oromo there were two forms of adoption, guddifacha, which was the adoption of an individual by a foster parent, and moggaasa, which was the adoption of either individuals or groups into a gaassa 'clan'. Both of these forms of adoption were formally recognized and ritualized, and also binding and unbreakable. Although it would be exceptional, a man might adopt an eldest son if his own children weren’t powerful enough to satisfy him even among modern western Oromos (Bartels 1983:136). Adoption of outsiders by Oromos was economically and politically beneficial to both parties, offering protection and material support to the adopted individuals and groups while at the same time enlarging and strengthening the Oromo clans. Hassen (1990:21ff) argues that this practice promoted the assimilation of other groups by the Oromo, rather than the reverse.

Modern Mecha Oromo distinguish Boraana, who are supposed to be directly descended from the original migrants, and gaboro, who have been assimilated from other ethnic groups. The Boraana are considered to be the channel through which god blesses the people, and they therefore enjoy certain social privileges and fulfill certain social obligations for the community. In fact though, the distinction between gaboro and Boraana is to some extent a fiction. A man from Wollega explains that "... [in] our country the purity of descent in even the highest Boraana lineages is questionable. My own grandfather, who was elected my people's ritual leader of their gada, was a son of a Mao [Omotic] mother ..." (Bartels 1983:160).

Oromo social practices are frequently organized on principles of community, rather than through descent and kinship groups (Bartels 1976, Lewis 1974, 1984). Neighbors and fellow members of formal and informal voluntary associations are often more important than kin in organizing social processes in Oromo culture. Work, conflict resolution, and preparations for funerals and births are typically organized by cooperating neighbors. Members of other ethnic groups may even be included in voluntary associations that are formed to take care of these kinds of social processes. In fact, this reliance on voluntary associations among neighbors is widespread among Cushitic people of this area, and it would have been a familiar institution for those who were assimilated into the Oromo clans.
The adoption customs and the community based organization processes of the Oromo brought conquered groups into the center of Oromo communal life, and individuals from other speech communities had to have shifted to the language of the Oromo people, in addition to sharing other cultural customs with them. Language communities that were in contact with the Tulama and Mecha communities over a considerable span of time include the Amhara, whose language, Amharic, is an Ethiopian Semitic language, and the Hadhyya, who speak a Highland East Cushitic language. In their migrations to the west, the Mecha also came into contact with speakers of Omotic languages. There is widespread multilingualism in western areas among speakers of Omotic languages to this day. Cooper, Singh and Ghermazion (1976) report that over half of the native speakers of Omotic languages in their surveys in western regions also speak Oromo.

2. Gender Assignment in Oromo. The gender assignment systems differ across the range of Oromo dialects. In dialects spoken to the east and south of Shoa, assignment has a phonological basis. Thus in these dialects, sareé 'dog' is feminine in unmarked contexts, as in 1a, because of the final non-low high tone vowel. The gender assignment system in Tulama and other western dialects is semantically transparent. Expressions denoting females and diminutives or pejoratives are feminine, and expressions denoting males and all other non-humans are masculine. In these dialects, sareé is masculine, as in 1b, unless the dog referred to is to be specifically identified as female, or is held in particular contempt or regard by the speaker.

(1) a. sareé bareed - duu
   dog F beautiful F
   'beautiful dog' (eastern / southern dialects)
   'beautiful female (/ dear or nasty) dog' (western dialects)

b. sareé bareed - aa
   dog M beautiful M
   'beautiful dog'
   'beautiful male (/ dear or nasty) dog' (eastern / southern dialects)

In all of the dialects of Oromo, an affective meaning is associated with a shift from the grammatically determined gender. Speaker B from the Harar dialect scorns the dog under discussion in the brief discourse in 2 (Clamon 1993:277).

(2) A: sareé takka ganda xeesa arkinne.
   dog F one F village in we saw
   'We saw a dog in the neighborhood.'

B: sareé-n xun bashoo tiyya jala fige.
   dog M SUB TOP that M cat F my F after ran M
   'That (grrrr) dog chased my cat.'

She expresses this by shifting the referring expression from the grammatically prescribed feminine gender into the masculine gender. Because of the semantic assignment basis in western dialects, only masculine expressions are eligible for gender shifting.
2.1 Gender Assignment in Other Afroasiatic Languages. Throughout the LEC branch, assignment of gender is based on phonological and semantic factors. In Somali, Rendille and Qafar, masculine and feminine nouns generally have distinctive accentual patterns. In all three languages there are pairs of polysyllabic feminine nouns having a final high tone accent, and polysyllabic masculine nouns having a final low tone, as illustrated in the pairs in 3 from Qafar (Hayward and Corbett 1988: 274.277), in 4 from Rendille (Oomen 1981:43), and in 5 from Somali (Kraska 1992:16).

(3) a. awká 'girl' b. áwka 'boy'
c. gabá 'hand F' d. iba 'foot M'
(4) a. iná 'girl' b. inam 'boy'
c. arám 'wife' d. óram 'husband'
(5) a. inán 'girl' b. inan 'boy'
c. orgú 'she-goat' d. orgi 'he-goat'

In Dasenech, although there may be some relationship between the gender of an expression and a referent's size, importance or strength, gender and phonological form also correlate with gender to a certain extent. Consonant final nouns are always masculine, and nouns ending in final ti are always feminine. Oomen (1981) and Kraska (1992) have both argued that feminine proto forms *Vt / *rV have eroded from the ends of feminine nouns that have the characteristic final high tone pattern in modern Rendille and Somali. This analysis could be extended to account for the patterns both in Dasenech and in eastern and southern Oromo dialects.

Gender assignment is described quite differently for non-LEC languages within Afroasiatic. In Hadiyya, for example, the semantic basis is entirely transparent: only expressions referring to females are feminine.4 Sasse (1984:117) claims that "...in addition to the semantic category of natural sex, which is of minor importance in the Cushitic, gender categories primarily denote the semantic notions of social significance (masculine) vs. social insignificance (feminine)". Agaw languages have no lexical or phonological bases; gender can only be assigned "...within a structured piece of speech" (Appleyard 1984: 582).5

Semitic languages also have two gender systems, with gender distinctions found in pronouns, nouns and verbs. Amharic, for example, has a two gender classification system. As in Agaw, the assignment of gender is based on semantic or pragmatic criteria. Cowley et al (1976: 84) write that the "...so-called masculine forms are really unspecified as to gender, while the feminine forms specifically refer to something female, relatively small, or toward which the speaker feels affection." This affective use of feminine gender is illustrated in the Amharic expressions in 6.

(6) a. yih mes'haf this M book
   'this book'
b. yicc mes'haf this F book
   'this (favorite/ little) book(let)'

In Hamer, an Omotic language spoken in southwestern Ethiopia, feminine gender is associated with the values that are usually associated with masculine gender in other Afroasiatic languages. Nouns denoting commonplace, large dependent or grouped objects are marked with the feminine -tono and -no
suffixes. Thus in addition to use of feminine expressions for reference to females, such as *ratcono* 'Rac woman', a noun used to refer to large referents such as *ammo* 'large field', is feminine, while a noun used to refer to small referents such as *amā* 'small field' is masculine, as in 7 (Lydall 1976:407).

(7) a. *rac* 'Rac (clan)'  
    *ratca* 'Rac man'  
    *ratcono* 'Rac woman'  
    *ranco* 'all Rac'  
    *ranca* 'several Rac'  

b. *ami* 'field'  
    *amā* 'small field'  
    *amno* 'large field'  
    *aminno* 'all fields'  
    *amma* 'several fields'

2.2. Reconvergence Hypothesis. Gender assignment in all of the non-LEC Afroasiatic languages is quite different from that of the eastern and southern dialects of Oromo and other LEC languages, in which a certain gender is associated with a noun. In these other languages nouns have no formal, underlying gender, but are assigned gender in each context on the basis of pragmatic context and cultural values. Although masculine is described as the explicit or implicit default gender, these languages do not have gender fixed in the lexicon, and it is the referent of an expression that is associated with certain values if the expression is masculine, others if it is feminine. Notice that this is equivalent to the gender assignment function in modern western Oromo varieties.

The difference in gender assignment in the western and eastern Oromo communities could have developed in two ways. A system originally based on semantic factors, like the western systems, could have developed into a more opaque system because of regular historical changes, analogy, etc., or a system based on a complex of semantic, lexical and phonological factors could have been simplified to a semantically transparent system, which I contend is what happened in the history of Oromo. Comparative linguistic evidence in support of this analysis is found in the data from other LEC languages (Qafar, Rendille, Somali, and Dasenech) which also assign gender on the basis of phonological form. If it were the case that an originally semantically transparent gender assignment basis had been preserved in the western Oromo varieties, then formal factors relevant to gender assignment would represent innovations, not only in the eastern and southern varieties of Oromo, but also in these other LEC languages. Since nouns with non-low final vowels are all feminine and also all have a final high tone accent in a number of the modern languages, it is likely that the assignment of gender was based on phonological form in Proto-LEC, and that the western dialects of Oromo have a simplified gender assignment system.

In non-LEC branches of Cushitic, and in Semitic and Omotic languages, gender is assigned on the basis of semantic value or pragmatic context, without reference to phonological form. Cultural and social institutions that operated to foster absorption of other speakers from these other groups into the migrating western Oromo communities introduced significant numbers of speakers of these more distantly related languages into the center of Oromo life. Since the Oromo community wanted to promote the inclusion of neighboring individuals and groups, they would have been motivated to accommodate innovations in the language. It seems likely that speakers of these other languages who shifted to Oromo would have carried over their semantically transparent system of gender assignment. Recognition of this new assignment function as the norm within these western groups would create a focus within the regional community,
balancing the blurring of gender assignment functions across the larger Oromo group. Examples of the generalization of gender assignment to a semantically transparent system are found in similar contact situations.

2.3. Convergence in Other Contact Situations. Gumperz and Wilson (1971) consider the simplification of the gender assignment function in Kupwar varieties of Urdu and Marathi. Kupwar village is a stable multilingual society in which Kannada and Marathi have been in intimate contact for six centuries, with Urdu introduced three or four centuries ago. Because of the stable social separation of speakers of the three languages, all three have been maintained, but many of the syntactic structures have converged in the Kupwar varieties. One convergence is found in the gender assignment systems.

In Urdu there are two genders, with most referring expressions for human females and males assigned feminine and masculine gender, respectively, and with nouns denoting inanimates assigned predictably to either gender on a phonological basis. Masculine is the default gender, used when gender is unspecified and when agreement is blocked by syntactic rules. In Marathi, there is a three gender system with a similar assignment function, except that neuter is the default gender. Kannada also has a three gender system, but assignment is entirely semantically based, expressions denoting female humans are feminine, those denoting male humans are masculine, and all others are neuter.

In the Kupwar variety of Kannada, the assignment function is the same as in other varieties of Kannada. But the Kupwar varieties of Marathi and Urdu now have semantically based assignment systems similar to the Kannada system. Kupwar speakers now classify referring expressions as feminine only if the referent is human and female. In Kupwar Urdu all other forms are masculine. In Kupwar Marathi, expressions referring to human males are masculine, all others neuter. The assignment function in these varieties has collapsed to a semantically based system just as in the western dialects of Oromo. This is illustrated in the data in 5 that show the difference in gender choice in Urdu and Kupwar Urdu (Gumperz and Wilson 1971: 156).

(8) a. \( wəhā \) \( nədii \) \( a-ii \). High Urdu
    there river came F
    'There was a flood.'

    b. \( hwe \) \( nədi \) \( ay-a \). Kupwar Urdu
    there river came M
    'There was a flood.'

    c. \( yəli \) \( hwarLi \) \( bət-tu \). Kupwar Kannada
    there river came N
    'There was a flood.'

In the Kupwar Urdu, the noun \( nədi \) 'river' is assigned masculine gender, although it would be assigned feminine gender in High Urdu.

Altogether, Gumperz and Wilson consider twenty-three modifications in the three languages. The modification in the gender assignment systems of Urdu and Marathi have the greatest number of changes, and represent the only instance where two languages have changed to become more like one. All of the changes that they observe are reductions or generalizations. The change in the gender systems of Urdu and Marathi to semantically predictable systems also corresponds
to the change in the Oromo assignment in the western varieties. Weinreich (1953: 42-43) discusses a number of contact situations, similar to the contact situation that western Oromos have been in recent centuries, in which grammatical accommodation results in the simplification of grammatical categories. He observes that the assignment of gender tends to be simplified to a semantically transparent basis, similar to that described in Gumperz and Wilson, and that I propose here for the western Oromo dialects. The acceptance of new speakers into the heart of the community provides a new focus that promotes the establishment focused language conventions within the new group.

3. The t / k Paradigm. In eastern, southern, and central dialects of Oromo there is a paradigm that has alternating t feminine and k masculine forms of demonstratives, possessive pronouns, relatives, and interrogatives. In the question in 9a from the eastern Arssi dialect, for instance, 'which' and 'your' are tamtu and tee, in agreement with haadha 'mother', but in the question in 2b, they are kamtu, and kee, in agreement with abbaa 'father'.

(9) a. tamtu haadha tee? b. kamtu abbaa kee?
   'Which is your mother?' 'Which is your father?'

This t / k alternation has been neutralized in western dialects throughout the paradigm. This is illustrated in the example in 10, from the western Wollega dialect.

(10) a. kamtu haadha kee? b. kamtu abbaa kee?
   'Which is your mother?' 'Which is your father?'

The masculine k initial form has been generalized, and 'which' is appropriately kamtu in both masculine and feminine expressions.

3.1. Simplification of the t / k Paradigm. Bryan (1959) is a survey of languages which have a paradigm with a t / k initial alternation. Some are Cushitic and others not in the Cushitic subfamily. She hypothesizes that these forms derive from a substratum. Later, Bryan retracted this hypothesis (Bynon and Bynon 1975: 358), but Hetzron (1980: 20) has suggested that perhaps Cushitic formed the substratum of other t/k languages. He points out that an alternation in Afroasiatic determiners may be posited between feminine *t and masculine *k\*w. Whatever the distant history, the paradigm was clearly not an innovation in Oromo.

While Cushitic languages have characteristically robust t / k paradigms, other Afroasiatic languages do not. Omotic languages do have two gender systems, with marking typically found on nouns and adjectives, personal pronouns and third person singular verbs. Assignment is semantically based, as it is in western varieties of Oromo. But although there are some reflexes of an earlier t / k system, notably an -o / -e alternation in nouns of some Omotic languages, there are no overt alternants in the modern languages.

Because there is an opposition of two markers, rather than an opposition involving one marker and an unmarked form, this area of the gender marking
system is more susceptible to collapse. The absence of an analogous opposition in Omotic languages, however, provides external pressure, because of the incidence of bilingualism that can be assumed, given the history of migration and assimilation of Omotic people by the Oromo in the western highlands, as well as the extensive present day bilingualism within Omotic communities in western areas.

3.2. Direction of Generalization. It is sometimes assumed that masculine gender will always be generalized. Hetzron (1980: 13), writes for example: "... that when only one gender survives in a language, it is the masculine that is likely to be generalized, not the feminine." Lehiste (1988) points out that although interference in the form of underdifferentiation in the gender assignment system of a second language is expected in second language speakers whose first language has no equivalent assignment function, the direction of generalization may well be unpredictable. It is the case that the generic gender in some languages is the feminine. Alpher (1987) identifies some languages in which feminine gender is the generic form. Bani (1987) and Vormann and Sharfenberger (1914) both describe languages with default feminine gender. In American Norwegian, new nouns are always classified as masculine, in Australian German, however, feminine is the default gender.

Alpher (1987) does make some predictions about the direction of generalization of gender which are consistent with the situation in the Oromo data. He claims that in a patriarchal society, a tendency toward generalization of the masculine form is expected, that in matriarchies, or societies where women are integrated together in a group with young and old males in the social pattern, feminine may well be the default gender. Baxter (1978), Haberland (1963), Knutsson (1976), Legese (1963) and Lewis (1963) all include descriptions of Oromo cultural organization, characterizing it as patriarchal. The position of women is described as marginal, although it is clearly little understood. In fact it is the masculine form that is generalized in all of the varieties of Oromo, except where feminine singular morphology is equivalent to collective marking, which is found throughout Afroasiatic. The masculine form is general in the plural relative and in the plural anaphoric in eastern varieties. In the western varieties the masculine form is always the default form, and it has been generalized in all the t/k forms, and in the assignment function as well.

4. Conclusion. There are two aspects of the gender systems that differ across the dialects of Oromo, the assignment system and the marking system. The assignment of feminine or masculine gender is based on phonological, semantic, and pragmatic information in the eastern and southern varieties, but on only semantic and pragmatic information in the varieties spoken in and to the west of Shoa. Further, the eastern and southern dialects of Oromo have a distinctive t/k paradigm that is also found in the other Cushitic languages, but neutralized to an all k system in western dialects. I have argued that the western varieties have been simplified.

Western Oromos have been in intimate contact with speakers of languages that assign gender on semantic grounds, with feminine the gender for diminutives and masculine the default gender, and western communities have assimilated large numbers of these speakers into the Oromo culture. This change is similar to the change to a semantically transparent system that is attested in unrelated languages
in similar contact situations. As second language speakers of Oromo redefined the assignment function, native Oromo speakers would have adopted the new conventions in order to strengthen group identity. Western Omotes would be less likely to focus on a common pattern with eastern and southern speakers as the geographic and social distances grew greater between the groups. As speakers focused within the migrant community, by establishing a new norm, the shared language features of the larger Oromo speech community blurred.

In Tulama and all dialects spoken to the east of Shoa, the \( t/k \) paradigm has been maintained. In the dialects west of Shoa, where Omotes have both assimilated speakers and maintained contact with unassimilated speakers from Omotic and Semitic speech communities, the variants are generalized to \( k \), the Cushitic masculine form. I have suggested that the \( t/k \) marking collapsed in the westernmost varieties of Oromo under the pressure of contact with languages that have no analogous pattern. Again, focus of language norms within the Mecha community promoted diffusion of language conventions across the Oromo dialects.

Although there is considerable contact between Omotes in eastern and southern communities and other ethnic groups, the contact is typically with speakers of other LEC languages, or involves contact with Arabic.\(^7\) This important contact with Arabic is diglossic, with native Oromo speakers typically using Arabic as the language of religion and instruction, or in trade, and there are clear influences on eastern dialects, notably in the addition of voiceless velar fricatives initially, and in the introduction of large numbers of Arabic loans.\(^8\) The western groups, however, have absorbed large numbers of speakers of other Cushitic, Semitic and Omotic languages, thus the substrate pressure on the gender systems in these western dialects has been sufficient to facilitate modifications in the grammar.

**Notes**

1 My thanks to Amal Osman for continuing help with Oromo, and to Fahmi Katabay, Stephanos Madda, Abraham Oluma and other members of the Oromo community of the Twin Cities for information about Oromo and the Oromo people. Thanks to Larry Hutchinson for much useful advice since the earliest research study leading to this paper, and thanks for helpful suggestions and discussion to Bruce Downing, Tim Dunnigan, Ann Mulkern, Bernd Heine, Nancy Stenson, and Jerry Sanders. I can in good conscience lay claim to all errors in the data and the analysis.

2 The *gada* system is a generation grade set that formed the foundation of traditional Oromo government. See Legesse Asmarom (1973) for a description of a modern *gada* institution among the Boranaa of southeastern Ethiopia and northern Kenya.

3 Although as few as eleven percent of speakers in some rural Oromo communities speak Amharic in modern Ethiopia, a very high percentage of native Oromo speakers in towns are bilingual in Amharic (Cooper, Singh and Ghermazion 1976).

4 There is no affective meaning associated with feminine gender in Hadiyya as in other Afroasiatic languages (Bender et al 1976).

5 Appleyard (1984), Castellino (1976) and Hetzron (1976) do indicate some correlation between #a and feminine in some of the Agaw languages but this appears to be overridden by pragmatic evaluation.

6 There is also an interaction with plural and for inanimates, these feminine endings also denote a 'global plural' or 'group singular', in contrast to a discrete 'particular plural', that specifies
several particular single cases as opposed to all cases, and is formed with the suffix -na. This is illustrated in the examples given in 7.

7. Heine (1980) indicates that the Burji (Highland East Cushitic) of Kenya are assimilating to Oromo, but the long term bilingualism of Burji speakers across generations has not had a direct impact on the southern Oromo in the gender system.

8. Gragg (1980) examines some of the complexities encountered in attempting to sort out the origins of lexical items that are shared across languages in this area, but it is clear that eastern Oromos have adopted relatively large numbers of Arabic words.

REFERENCES


