

# Phonological Licensing and Lexical Incorporation

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The Condition of Licensing proposed by Chomsky (1986), according to which a grammatical structure is well-formed only when all elements take part of a linguistic relation, which defines their occurrence in the structure, has clearly extended to most components of the grammar in the last years. Regarding phonology, the Stray Erasure Convention, originally proposed in McCarthy (1979), which ensured the elision of unsyllabified elements, has become the ancillary mechanism of Prosodic Licensing (Itô 1986) to eliminate phonological units that do not belong to a higher prosodic structure. Despite the application of such a principle to all domains of the grammar, one can seldom check the results of its interaction in different components to get hold of its formal properties. The aim of this contribution is just to investigate to which extent the concept of licensing shows *the same properties in phonology and the lexicon*, by analyzing a case of lexical incorporation of the genitive marker that Oromo, an Afroasiatic language, shows.

The paper is organized as follows: The first part presents different types of constructions where genitive and possessives are involved. The second part accounts for some particular occurrences of possessives, which have traditionally remained unexplained, by means of lexical incorporation. Finally, the results will be summed up and a conclusion will be drawn regarding the interaction of the condition of licensing in different components of the grammar.

## 1. Genitive and possessive pronoms

### 1.1. Genitive constructions

In Oromo, an East Cushitic language spoken in the southern part of Ethiopia and northern Kenya with upwards of seven million speakers, genitive (GEN) is an

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enclitic construction which consists of the thing possessed followed by the possessor, whose last vowel is lengthened as a result of phrase-final case marking.<sup>1</sup>

- (1) a. *intala fira + {:}* → *intala firaa* 'a friend's girl'  
 girl friend+GEN  
 b. *intala fira sooressa + {:}* → *intala fira sooressaa* 'a rich friend's girl'  
 girl friend rich + GEN  
 c. *intala fira sooressa kana + {:}* → *intala fira sooressa kanaa* 'this rich  
 girl friend rich this + GEN friend's girl'  
 (where: {:} represents the length marker)

When the last vowel to which the length marker attaches is short, it unquestionably becomes long, as shown in (1). When the vowel is originally long, it does also result in a lengthened vowel, although this extra-long vowel does not always clearly surface. In the Mechaa dialect, spoken in the Western area, the contrast between long and extra-long vowels only surfaces prepausally (Lloret 1989): originally long vowels and lengthened short vowels are realized with a final glottal stop (2a), while extra-long vowels, i.e. lengthened long vowels, are realized as full long (2b).<sup>2</sup>

- (2) a. *intala fira + {:}* → /*intala fira+a/* ↗ [*intala fira?*] / \_\_\_## a friend's girl  
 girl friend + GEN ↘ [*intala firaa*] / elsewhere  
 b. *intala ollaa + {:}* → /*intala ollaa+a/* → [*intala ollaa*] 'a neighbour's girl'  
 girl neighbour + GEN

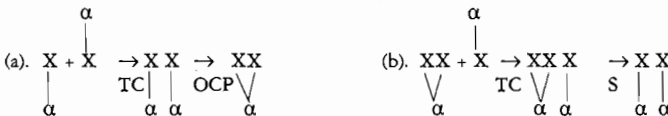
The southern Borana dialect and the eastern Arsii one present a different type of contrast, which affects all positions. In Borana (Stroomer 1987), originally long vowels and lengthened short vowels are realized with a final voiceless vowel (3a) while extra-long are realized as full long (3b). In Arsii (Banti 1988), the former are realized full long (4a) while the latter are realized with a medial glottal stop (4b).<sup>3</sup>

- (3) a. *intala fira + {:}* → [*intala fira<sup>h</sup>*]  
 b. *intala ollaa + {:}* → [*intala ollaa*]  
 (4) a. *intala fira + {:}* → [*intala firaa*]  
 b. *intala ollaa + {:}* → [*intala olla<sup>h</sup>aa*]

Genitive is not the only grammatical relation expressed by means of an enclitic construction which results in the lengthening of phrase-final vowels. Benefactive (BEN) and instrumental (INS) entail lengthening as well, although they further add

(1) Genitive is also marked by a high tone on the final syllable of the phrase. In this paper, however, tone will be ignored. See Owens (1985) and Banti (1988), among others, for a complete account of Oromo tonal patterns.

(2) See Lloret (in print a) for an autosegmental phonological interpretation of this length marker as a copying process, which, after Tier Conflation (TC), ends up (a) fusing identical short melodies in order not to violate the Obligatory Contour Principle (OCP) or (b) shortening (S) the resulting sequence in order not to violate the Oromo syllable structure, which does not allow trivocalic syllables.



(3) See Lloret (in print a) for the phonological analysis of these dialectal forms.

other segmental marks: benefactive adds *fi* after the length marker while instrumental adds *ni* (5a, b). Note that when these case markers attach to an originally long vowel (5b), Oromo shows the possibility of inserting the particle *dʌ* to overtly mark length.<sup>4</sup> This particle can never occur in genitive constructions (5c).

- (5) a. *fira* + {:*fi*} → /*fira*+*afi*/ → [*firaafi*]<sup>5</sup> 'for a friend'  
 friend + BEN  
*harka* + {:*ni*} → /*harka*+*ani*/ → [*harkaani*] 'with a hand'  
 hand + INS  
 b. *ollaa* + {:*fi*} → /*ollaa*+*afi*/ → [*ollaaafi*] 'for a neighbour'  
 neighbour + BEN ↘ /*ollaa*+*dʌ*+*afi*/ → [*ollaaʔafi*]  
*haaduu* + {:*ni*} ↘ /*haaduu*+*uni*/ → [*haaduuuni*] 'with a knife'  
 knife + INS ↘ /*haaduu*+*dʌ*+*ani*/ → [*haaduuʔaani*]  
 (Cf. c. *ollaa* + {:*ni*}) → [*ollaa*] neighbours )  
 neighbour+GEN ↘ \*[*ollaaʔaa*]

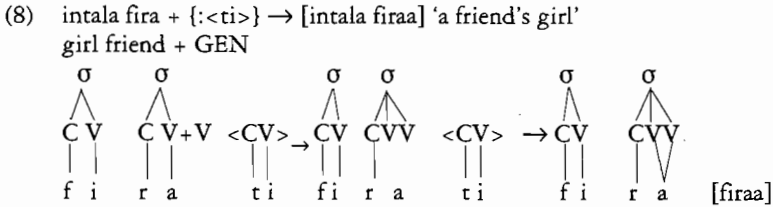
So far we have argued for the genitive marker {:*ni*}. However, a more detailed analysis of complex constructions shows evidence in favour of a particle *ti* exclusively related to complex genitive constructions. As shown in (6), when the genitive is followed by another enclitic case marker, a particle *ti* occurs, presumably in order to overtly mark the lengthening that the following case marker causes. As defended in Gragg (1976), Bender (1986) and Lloret (in print b), *ti* is not just another particle to overtly mark length but it obligatorily is a constituent part of the genitive marker. The data in (7) show the agrammaticality of the previous constructions without *ti* (7a) or with other particles that overtly mark length (7b).

- (6) a. *intala fira* + {:*ni*} + {:*fi*}  
 girl friend + GEN + BEN  
 → /*intala fira*+*a*+*ti*+*ifi*/ → [*intala firaatiifi*] 'for a friend's girl'  
 b. *intala ollaa* + {:*ni*} + {:*fi*}  
 girl neighbour + GEN + BEN  
 → /*intala ollaa*+*a*+*ti*+*ifi*/ → [*intala ollaatiifi*] 'for a neighbour's girl'
- (7) a. *intala fira* + {:*ni*} + {:*fi*}  
 girl friend + GEN + BEN  
 → \*/*intala fira*+*a*+*afi*/ → \*[*intala firaafi*](cf. 6a)  
*intala ollaa* + {:*ni*} + {:*fi*}  
 girl neighbour + GEN + BEN  
 → \*/*intala ollaa*+*a*+*afi*/ → \*[*intala ollaafi*](cf. 6b)  
 b. *intala fira* + {:*ni*} + {:*fi*}  
 girl friend + GEN + BEN  
 → \*/*intala fira*+*a*+*dʌ*+*afi*/ → \*[*intala firaadʌafi*] (cf. 6a)  
*intala ollaa* + {:*ni*} + {:*fi*}  
 girl neighbour + GEN + BEN  
 → \*/*intala ollaa*+*a*+*dʌ*+*afi*/ → \*[*intala ollaadʌafi*] (cf. 6b)

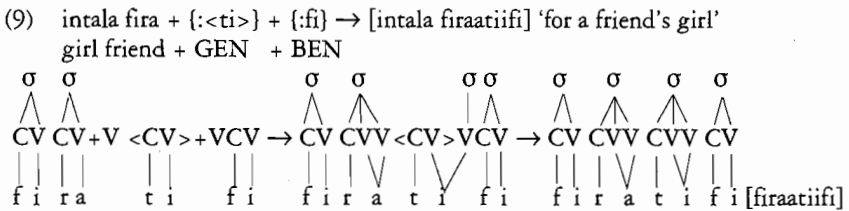
(4) See Lloret (in print b) for an analysis of this particle.

(5) Although in this paper final *i* is considered to be phonetically realized as full [i], it must be pointed out that it is realized as reduced, or even completely deletes, under certain conditions. (See Lloret 1989 for further information.)

My proposal is that the *ti* particle has to be interpreted as an extraprosodic element, which is ignored by the rules of syllabification, as though this sequence were not there. I will use the symbol "<>" to mark extraprosodicity in segmental strings. The segmental representation of the genitive marker, thus, will be {:<ti>}. When the genitive marker occurs in absolute phrase-final position, it ends up deleting by the Stray Erasure Convention, because it cannot be incorporated into the prosodic structure (8). Note that autosegmentally the length marker is interpreted as an empty vocalic position filled by the melody of the preceding vowel.<sup>6</sup>



However, when the genitive marker is followed by another case marker that involves lengthening of the last vowel, *ti* is licensed because it ends up sharing its vocalic melody, i.e. /i/, with the empty vocalic position created by the following case marker (9). The licensing of the particle *ti* is, thus, due to what was previously correctly presumed: the overt-marking of length.



In view of the results, it would be inadequate to end up this analysis without a reference to the Peripherality Condition, proposed in Harris (1983). According to Harris, all extrametrical elements are universally peripheral, that is, they can only appear at the edges. This condition does not only restrict what can be assigned extrametrical in the lexicon, but rather it actually erases extrametricality when the elements lose their peripheral position, though these elements may be legitimately extrametrical in other contexts. In line with this proposal, the Oromo extraprosodic *ti* particle loses its extrametrical condition when it is followed by another enclitic case marker just as a consequence of the Peripherality Condition, that is, when it is no longer peripheral, as plainly represented in (10).

- (10) *intala fira* + {:<ti>} → *intala fira* 'a friend's girl'  
 girl friend + GEN  
*intala fira* + {:<ti>} + {:fi}  
 girl friend + GEN + BEN  
 → *intala fira* + {:ti} + {:fi} → *intala firaatiifi* 'for a friend's girl'

(6) See note 2.

### 1.2. Possessive pronouns

In the Oromo literature, possessive pronouns have been considered to be possessive semantically, i.e. they are not overtly marked for the genitive case.

(11)	koo	'my'	Exs.:	fira koo	'my friend'
	kee	'your'		fira kee	'your friend'
	saa	'his'		fira saa	'his friend'
	see	'her'		fira see	'her friend'
	keeffña	'our'		fira keeffña	'our friend'
	keesani	'your'		fira keesani	'your friend'
	saanii	'their'		fira saanii	'their friend'

Because of this analysis, possessives were reported as having special constructions where the particle *ti* exceptionally occurs, sometimes obligatorily and at other times optionally, without a genitive construction being "apparently" involved. Compare, for example, the non-genitive construction in (12a) and (12b), where the *ti* particle inexplicably occurs in the latter.

- (12) a. intala keeffña + {:fi} → intala keeffñaafi 'for our girl'  
           girl our + BEN
- b. intala sa + {:fi} → intala saatiifi 'for his girl'  
           girl his + BEN

Lloret (1988), priorly observing that *ti* only occurs with the pronouns that end in a long vowel, suggests an explanation for these unfitting cases: the possessive pronouns that end in a short vowel are possessive semantically but not genitive case (13a), while the pronouns that end in a long vowel are not only possessive semantically but are morpho-syntactically marked in that they are overtly marked for the genitive case (13b). As a result, thus, the possessive pronouns are interpreted as a split paradigm with lexical and morphological forms.

- (13) a. *Lexical forms*: Lexically marked as [+GEN]:  
           keeffña 'our'  
           keesani 'your'
- b. *Morphological forms*: Morpho-syntactically marked with {<ti>}:  
           koo = ko + {<ti>} 'of me'  
           kee = ke + {<ti>} 'of you'  
           saa = sa + {<ti>} 'of him'  
           see = se + {<ti>} 'of her'  
           saanii = saani + {<ti>} 'of them'

The appearance of *ti* in constructions like (12b) follows directly from this analysis: if the possessive pronoun is unmarked for case, it just lengthens its last vowel when a case marker like benefactive attaches to it (14a); if the possessive is morpho-syntactically marked, the *ti* particle appears because it is licensed by the following case marker (14b).

- (14) a. intala keeffña + {:fi} → intala keeffñaafi 'for our girl'  
           girl our + BEN

- b. intala [sa+ {:<ti>} ] + {:fi}  
 girl of 'him' + BEN  
 → intala [sa+ {:ti} ] + {:fi} → intala saatiifi 'for his girl'

In the case of simple constructions like (15) where possessives are not followed by any enclitic case marker, the results are as expected: lexical possessives do not undergo any change (15a); morphological forms lengthen their last vowel while the *ti* particle is erased as a consequence of Prosodic Licensing (15b). When a possessive is the last element of a genitive construction (16), the results are as expected too: when the possessive is unmarked, it lengthens the last vowel because of the genitive marker and the unlicensed *ti* deletes (16a); when the possessive is morpho-syntactically marked, the *ti* of the possessive form is licensed by the following genitive marker but the *ti* of this last case marker deletes because it remains unlicensed (16b).

- (15) a. intala keeñña → intala keeñña 'our girl'  
 girl 'our'  
 b. intala [sa + {:<ti>} ] → intala saa 'his girl'  
 girl 'of him'
- (16) a. intala fira keeñña + {:<ti>} → intala fira keeñña 'our friend's girl'  
 girl friend our + GEN  
 b. intala fira [sa + {:<ti>} ] + {:<ti>}  
 girl friend 'of him' + GEN  
 → intala fira [sa + {:ti}] + {:<ti>} → intala fira saatii 'his friend's girl'

It is fitting to discuss which kind of correspondance exists between the base form of morphological possessives and the absolutive form of personal pronouns, i.e. the form used in absolutive case (the accusative) and as base form of encliticization. Interestingly, we can observe that in third persons the absolutive form of personal pronouns (17a) is exactly like the base form used in the formation of morphological possessives (17b). Note that in light of the pronominal accusative forms, third feminine singular is now assumed to have a long vowel in the base form.

- (17) Third person absolutive/base forms: *sa, see, saani*:
- a. sa 'him' sa + {:fi} → saafi 'for him'  
 see 'her' see + {:fi} → seefi 'for her'  
 saani 'them' saani + {:fi} → saaniifi 'for them'
- b. sa + {:<ti>} → saa<ti> 'of him'  
 see + {:<ri>} → see<ti> 'of her'  
 saani + {:<ti>} → saanii<ti> 'of them'

First and second persons, however, show different base forms for personal pronouns (18a) and possessives (18b).

- (18) a. First & second person absolutive/base forms for personal pronouns: *na, si*:  
 na 'me' na + {:fi} → naafi 'for me'  
 si 'you' si + {:fi} → siifi 'for you'
- b. First & second person base forms for morphological possessives: *ko, ke*:  
 ko + {:<ti>} → koo<ti> 'of me'  
 ke + {:<ti>} → kee<ti> 'of you'

According to Comrie's (1981) language universals, one of the clearest distinctions that languages make to manifest animacy is to formally distinguish the speech act participants (first and second persons) from the rest of the participants (third persons). He also points out that this special treatment is manifested in singular more likely than in plural. Thus, for instance, in Tangut, a Sinotibetan extinguished language, the agreement between subject and verb is optional, and only takes place with a first or second person subject. Also, Spanish formally expresses this kind of distinction in pronominal forms by using the nominative forms in third person oblique constructions (19a), and first and second plural too (19b), while first and second persons show other forms in singular (19c). Therefore, in light of universal ways in which languages formally distinguish extra-linguistic properties like "animacy", Oromo follows the more likely hierarchy for pronouns: first and second versus third persons and singular versus plural.

- |         |   |  |
|---------|---|--|
| (19) a. | de él/ella/ellos/ellas<br>of he/she/they(masc.)/they(fem.)<br>con él/ella/ellos/ellas<br>with he/she/they(masc.)/they(fem.)   | 'of him/her/them'<br><br>'with him/her/them' |
| b.      | de nosotros/nosotras/vosotros/vosotras<br>of we(masc.)/we(fem.)/you(masc.)/you(fem.)<br>con nosotros/nosotras/vosotros/vosotras<br>with we(masc.)/we(fem.)/you(masc.)/you(fem.) | 'of us/you'<br><br>'with us/you'             |
| c.      | de mí/ti<br>of me/you<br>conmigo<br>contigo   | 'of me/you'<br><br>'with me'<br>'with you'   |

## 2. Lexical incorporation of the genitive marker.

In the previous section different data and arguments have been given for a split account of Oromo possessives. The language, however, also provides some marginal but rather surprising results in constructions ending in morphological possessives followed by another enclitic case marker. In these constructions, the most common result is the expected: the *ti* particle of the possessive is licensed by the following marker, as previously shown in (14b) and (16b), repeated here as (20). Marginally, however, utterances without *ti* are also accepted (21).

- |         |   |
|---------|---|
| (20) a. | intala [sa + {<ti>}] + {fi}<br>girl of him + BEN<br>→ intala [sa + {ti}] + {fi} → intala saatiifi (=14b) 'for his girl'                             |
| b.      | intala fira [sa + {<ti>}] + {<ti>}<br>girl friend of him + GEN<br>→ intala fira [sa + {ti}] + {<ti>} → intalafira saatii (=16b) 'his friend's girl' |
| (21) a. | intala saafi 'for his girl' (cf. 20a)   |
| b.      | intala fira saa 'for his friend's girl' (cf. 20b)   |

It is true that (21) occur less frequently than (20); but, inasmuch as they are acceptable, they also require an explanation. The intuitive idea is that morphological

forms are sometimes treated as if they were lexical, that is, inherently marked for genitive. The explanation for that is to be found in the asymmetry of the possessive pronoun paradigm, as previously suggested in Lloret (1988): since in the possessive paradigm lexical possessives coexist together with morphological possessives, it is not surprising that the language tends to eliminate this asymmetry by "reinterpretation" of morphological forms as lexical possessives (22).

(22) "Reinterpretation" (= >) of morphological forms as lexical: ([+GEN])

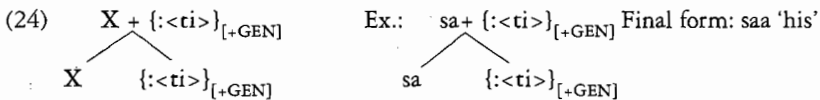
ko	+	{:<ti>}	=>	koo	'my'
ke	+	{:<ti>}	=>	kee	'your'
sa	+	{:<ti>}	=>	saa	'his'
see	+	{:<ti>}	=>	see	'her'
saani	+	{:<ti>}	=>	saanii	'their'

If morphological forms are reinterpreted as lexical, e.g. *sa* + {:<ti>} (a dimorphemic form) => *saa* (a monomorphemic form), we get examples like (21), repeated here as (23).<sup>7</sup>

(23) a. *intala saa* + {:fi} → *intala saafi* 'for his girl'  
 girl his + BEN

b. *intala fira saa* + {:<ti>} → *intala fira saa* 'for his friend's girl'  
 girl friend his + GEN

The reason for reinterpretation seems, thus, well motivated. A formal analysis of this process is, however, still required. My proposal is that "reinterpretation" has to be seen as a process of grammaticalization, as a case of lexical incorporation. As shown in (24), the morpho-syntactic mark of genitive, i.e. {:<ti>}, is lexically incorporated into the base form of the possessive (X). As a result of this process, the final vowel of the base form is lengthened and the resultant form is inherently marked [+GEN], as lexical possessive forms are. It is, thus, a process of Feature Percolation in the sense of Lieber (1981).<sup>8</sup>



A final point should be noted with respect to the behavior of *ti*. Possessives resulting from lexical incorporation do not contain the *ti* particle. Further, they do

(7) In contrastive sentences morphological interpretations of the possessive tend to occur in contrastive position (a). However, this is a tendency, not an obligatory condition. Thus, all the other possibilities are also acceptable for a sentence (b,c).

- (a) *inni kana fira saatiifi bite, fira koofi, miti*  
 he this friend 'of his'+BEN bought friend my+BEN not  
 'he bought this for his friend, not for my friend'
- (b) *inni kana fira saatiifi bite, fira kootiifi miti*  
 he this friend 'of his'+BEN bought friend 'of me'+BEN not
- (c) *iini kana fira saafi bite, fira koofi miti*  
 he this friend his+BEN bought friend my+BEN not

(8) The Feature Percolation Convention referred to here is as follows (Lieber 1981):

Convention II: All features on an affix morpheme including category features percolate to the first branching node dominating that morpheme.



not show any trace of this extraprosodic element. The explanation is to be found in the opacity of lexical processes: lexical incorporation of the genitive marker takes place in the lexicon, where genitive is not followed by any other enclitic marker. Hence the *ti* particle is erased because of its peripheral position. When in the syntax the resulting possessive form is put together with an enclitic case marker, it is impossible for it to recover the *ti* particle, because it has been completely erased during the lexical process. The resulting lexical forms, thus, behave exactly like original lexical possessives, as expected. The outcome satisfactorily fulfills the requirement of the language as well: to hold a unitary paradigm of lexical possessive forms.

Our account of these data, in the light of licensing theory and lexical incorporation, is straightforward. It might seem somewhat intricate but it accounts for all kinds of complex constructions, which in other proposals remain overlooked and/or unexplained. Alternative phrases like (25a,b), for instance, can now be justified in the light of different considerations. In (25a) a morphological possessive does occur: the *ti* particle of the possessive is licensed by next case marker, i.e. genitive, and because of it the final vowel is lengthened as well. The *ti* particle of this latter genitive is also licensed by next case marker, i.e. benefactive, which lengthens its final vowel too. This construction alternates with (25b), where the possessive has been reinterpreted as lexical: the extra-length produced by the genitive marker does not show up, but the *ti* particle of this genitive is licensed and lengthens its final vowel because of next case marker, i.e. benefactive.

- (25) a. intala fira [sa+ {:<ti>} ] + {:<ti>} + { : fi}  
 girl friend of him + GEN + BEN  
 → fira [sa + {:ti} ] + {:ti} + {:fi} → intala fira saatiitiifi 'for his friend's girl'
- b. intala fira saa + {:<ti>} + {:fi}  
 girl friend his + GEN + BEN  
 → fira saa + {:ti} + {:fi} → intala fira saatiifi 'for his friend's girl'

### 3. Conclusion

In Oromo, the genitive marker is better interpreted as the enclitic {:<ti>}, where *ti* is an extraprosodic element which is ignored by rules of syllabification, i.e. it is transparent to syllabification. The *ti* particle, as any extraprosodic segment, is peripheral. Extraprosodic segments may eventually be incorporated into prosodic structure. According to Harris' (1983) Peripherality Condition, this happens when the extrametrical element is no longer peripheral. In Oromo, this is accomplished when the genitive enclitic is followed by another enclitic case marker, which furthermore lengthens its final vowel.

The Oromo possessive pronouns are better accounted for as a split paradigm where some forms are lexically marked for possession but not morpho-syntactically marked, i.e. the pronouns that end in a short vowel, while others are overtly marked for the genitive case, i.e. the pronouns that end in a long vowel. The language, however, tends to regularize this asymmetric paradigm by optionally reinterpreting the morphological forms as lexical.

The "reinterpretation" of morphological possessives as lexical is to be understood as a process of lexical incorporation of the genitive marker. In these lexically derived possessives, the *ti* particle is completely erased, because lexical incorporation is a closed operation that takes place in the lexicon, and there *ti* is always peripheral, that is, it is not followed by another enclitic marker within the lexicon.

The Oromo data discussed in this paper thus brings new evidence in favour of lexical incorporation as an opaque, closed operation, which cannot accede to the rest of the grammatical information. The phonological conditions under which *ti* is licensed are, thus, the same in syntax and the lexicon; the opacity of lexical incorporation, however, unables it to be properly licensed in the lexicon.

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