

# DIRECT AND INDIRECT AFFIX BORROWING

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A widespread assumption in the language contact literature is that affixes are never borrowed directly, but only indirectly, that is, as part of complex loanwords. From such complex loanwords, affixes may eventually spread to native stems, creating hybrid formations, in a process of language-internal analogical extension. Direct borrowing is the extraction of an affix based on knowledge of the donor language, without the mediation of complex loanwords within the recipient language. This article suggests that direct borrowing can also be the only or primary process leading to productive loan affixes. Criteria are provided to assess instances of direct and indirect borrowing on the basis of the distribution of borrowed affixes across complex loanwords and hybrid formations. These are applied to corpora of various languages. A scale of directness of affix borrowing is proposed, based on the extent to which speakers of the recipient language rely (i) on their knowledge of the donor language (direct borrowing) and (ii) on complex loanwords within their native language (indirect borrowing).\*

*Keywords:* affix borrowing, productivity, language contact, historical linguistics, corpora

**1. INTRODUCTION.** Affix borrowing has received considerable attention in the recent literature on language contact (Gardani 2008, Johanson & Robbeets 2012, Seifart 2013, 2015, Gardani et al. 2015). This work has concentrated on establishing ‘borrowing hierarchies’ (Matras 2009:153–65) to determine which forms or categories are more likely to be borrowed than others. The current study focuses on a different but equally central question about affix borrowing. It is not about WHICH forms are borrowed, but HOW they are borrowed. There are two hypothetical scenarios for such processes: indirect borrowing and direct borrowing (see also Winford 2005:385–409). Indirect borrowing is illustrated in Figure 1: the originally French adjectivizer suffix *-able* was borrowed into English (further discussed in §5.2). This scenario involves two subprocesses. First, a language borrows a number of complex loanwords containing an affix, and second—possibly much later—these complex loanwords come to be analyzed within the recipient language, and eventually the affix becomes productively used on native stems.

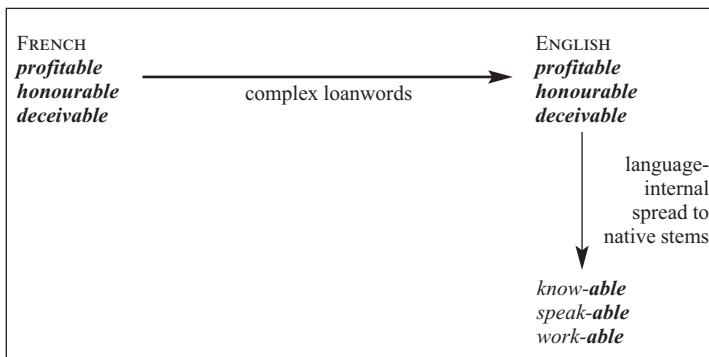


FIGURE 1. Indirect borrowing of Norman French *-able* into English (based on Dalton-Puffer 1996:183, 221).

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The second scenario is direct borrowing, illustrated in Figure 2 with the classifier *-ba* (used for fruits, logs, drinks, etc.), which was borrowed from Bora into Resígaro (further discussed in §4.1). Under direct borrowing, an affix is recognized by speakers of the recipient language in their knowledge of the donor language and used on native stems as soon as it is borrowed, with no intermediate phase of occurring only in complex loanwords. The fundamental difference between these two scenarios for HOW an affix is borrowed is thus FROM WHERE speakers take the affix prior to using it on native stems: from complex loanwords in the recipient language (indirect borrowing), or from their knowledge of the donor language (direct borrowing).

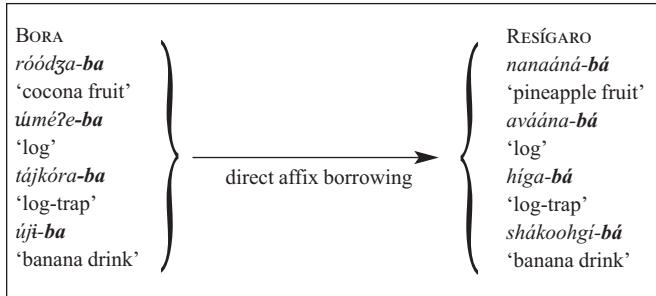


FIGURE 2. Direct borrowing of Bora *-ba* (classifier for fruits, logs, drinks, etc.) into Resígaro.

A widespread view is that indirect borrowing is the only possible scenario for affix borrowing, as Hermann Paul makes clear:

Words are always borrowed in their entirety; never derivative and inflexional suffixes. If, however, a large number of words containing the same suffix is borrowed, these range themselves into a group just as easily as native words with the same suffix: and such group may become productive in its turn. The suffix thus adopted may be attached, by means of analogical new-creation, to a native root. (1891 [1880]:469–70)

For Weinreich (1953), most cases of affix borrowing have come about through indirect borrowing, except for a 'residue of cases which can be explained in no other way' (1953:31–32), suggesting that direct borrowing is rare and exceptional. However, neither Weinreich nor subsequent scholars, such as Kossmann (2011), provide explicit criteria for characterizing individual instances of affix borrowing as direct vs. indirect.

The current study proposes that the distribution of borrowed affixes in corpora can be used to assess the possibilities of direct and indirect borrowing (§2). It then discusses a number of cases in which direct borrowing was probably the primary, if not the only, process involved (§3), challenging the view that direct borrowing is impossible. Sections 4 and 5 discuss cases in which both direct and indirect borrowing are probably involved to different degrees. A scale of processes of affix borrowing is fleshed out in §6, ranging from hypothetical cases of pure direct borrowing to hypothetical cases of pure indirect borrowing. Finally, the contribution of this approach to general frameworks of contact-induced language change is discussed in §7.

**2. DATA AND METHODS.** Ideally, evidence for direct or indirect affix borrowing could be provided by extensive historical corpora. If, for instance, in such corpora the earliest attestations of a borrowed affix are on native stems, without a preceding phase in which the affix is attested in complex loanwords only, this would be good evidence of direct borrowing. The most comprehensive historical documentation for a single language is probably that of English (§5.2), but for most or all other cases of affix borrowing com-

parable historical documentation is lacking. As pointed out by Sapir (1921:217), however, the absence of evidence of direct affix borrowing in historical documentation should not be taken as evidence of the absence of direct affix borrowing. It is simply a reflection of the fact that there are only very few languages with extensive historical documentation, in addition to the fact that affix borrowing is overall not particularly common.

An alternative approach, which is taken here, is to study the distribution of borrowed affixes across types and tokens of complex loanwords and hybrid formations in synchronic and historical text corpora. The focus is on the numbers and frequencies of complex loanwords with a certain affix, and of corresponding simplex loanwords without that affix. The aim is to determine whether these sets of loanwords alone allowed speakers to identify the affix and its function in order to then use it productively on native stems, that is, whether speakers could have used an indirect borrowing strategy. Corpus linguistic research has gathered ample evidence that the likelihood of an affix becoming productive is strongly determined by certain patterns in the corpus frequencies of complex words that contain the affix and of corresponding simplex words (e.g. Bybee 1995, Hay 2001, Plag 2003, Hay & Baayen 2005, Baayen 2008). Assuming that the underlying principles apply equally to both native and borrowed affixes,<sup>1</sup> these findings are used here to develop the following three criteria for indirect borrowing (to the extent that these findings are applicable to the relatively small corpora used here, that is, excluding measurements based on hapax legomena).

(1) CRITERIA FOR INDIRECT AFFIX BORROWING

- CRITERION 1: There is a set of complex loanwords containing a borrowed affix that have a common, recognizable meaning component, for example, a set of words that contain the same affix and that all denote properties or possibilities, such as *profitable*, *honorable*, *deceivable*, and so forth.
- CRITERION 2: There is a set of pairs of loanwords, one with and one without the affix, with constant, recognizable changes in meaning, for example, pairs of simplex loanwords and complex loanwords, where the complex loanwords denote the property or possibility of what the simplex loanwords express, for example, *profit–profitable*, *honor–honorable*, *deceive–deceivable*, and so forth.
- CRITERION 3: Within pairs of complex loanwords and corresponding simplex loanwords, complex loanwords have a lower token frequency than the corresponding simplex loanwords; for example, *profitable* is less frequent than *profit*.

The presence of complex loanwords is a necessary condition for indirect borrowing. If there are none, then the affix can only be taken from knowledge of the donor language, that is, through direct borrowing. Therefore criterion 1 is the most important one. Note that it may be possible for an affix to become productive from just a single complex loanword, without relevant knowledge of the donor language, as in, for example, the spread of *-(o)holic* from *alcoholic* to words such as *chocoholic*, *workaholic*, *computerholic*, and so forth (note that this borrowed affix is the product of reanalysis). However, if one such word has the potential to initiate a productive morphological

<sup>1</sup> This assumption is justified by the fact that the different behavior in terms of productivity of some French-based affixes in English is determined not by their etymology but by distributional, morphological, and phonological characteristics shared also with some native affixes (Plag 1999:53–60).

process, then the probability for it to actually happen increases the more words there are available, as has been shown by, for example, Bybee, who concludes that ‘the more forms that bear [an] affix, the stronger the representation of that affix [and] the greater likelihood that that affix will be productive’ (1995:434). Therefore, the more complex loanword types that are attested, the more likely is indirect borrowing. In order to compare numbers of complex loanwords across corpora of different sizes, the ratio of complex loanwords to hybrid formations is used in the current study as a proxy for the absolute number of complex loanwords.<sup>2</sup>

Sets of complex loanwords without corresponding simplex loanwords—for example, *profitable*, *honorable*, and *deceivable* in the absence of *profit*, *honor*, and *deceive*—may be a sufficient basis to identify an affix and its function through analogical deduction, and thus to initiate a process of indirect borrowing. The presence of corresponding simplex loanwords (criterion 2) makes an affix even more salient, however, as these pairs allow speakers to directly experience the segmentability and the meaning contribution of the affix, resulting in ‘stronger memory traces for the rule itself, and hence an intrinsically increased potential for producing and understanding new words’ (Baayen 2008:913).

With respect to token frequencies of complex loanwords (criterion 3), various studies have shown that lower rather than higher token frequency facilitates affix identification, because for low-frequency words ‘comprehension and production is most likely to benefit from rule-driven processes. Conversely, when a morphological category comprises predominantly high-frequency words, strong memory traces for these words exist that decrease the functional load for production and comprehension through rule-driven processes’ (Baayen 2008:912). Thus ‘infrequent complex words have a strong tendency to be decomposed’, while ‘highly frequent forms ... tend to be stored as whole words in the lexicon’ (Plag 2003:51). Hay (2001) has shown this in an experiment in which speakers were asked to rate the complexity of affixed words. Crucially, it is not so much low token frequency of complex words itself that facilitates analyzability, but rather low token frequency relative to corresponding simplex forms, as Hay (2001) has also shown. As a consequence, ‘affixes represented by more words which are infrequent relative to their bases ... are also more readily available for use in new words; that is, they tend to be more PRODUCTIVE’ (Hay & Baayen 2005:345, emphasis in original).<sup>3</sup> Accordingly, criterion 3 is operationalized here by calculating the proportion of complex loanwords that have a low token frequency relative to corresponding simplex loanwords among all attested complex loanwords.

In sum, the ideal situation for an affix to spread from complex loanwords to native stems involves a large number of complex loanword types, the existence of pairs of loanwords with and without the affix, and low token frequencies of complex loanwords, especially relative to the frequencies of corresponding simplex loanwords. If all of these criteria are met to a high degree, this indicates that indirect borrowing was the only or primary process involved. To the extent that these criteria are not met, this indicates an increasingly higher probability of direct borrowing. Note that, in principle, one can either establish criteria to identify indirect borrowing and take the residue to be

<sup>2</sup> Further research is needed to investigate whether, in addition to the overall type frequency, domain-relative type frequency plays a role. That is, complex loanwords with a particular affix might be infrequent overall but form a large proportion of a particular lexical field, making the affix more salient.

<sup>3</sup> In this context, Hay and Baayen (2005:345) also discuss the role of ‘low probability phonotactics’ as another factor facilitating productivity. Determining the probability of phonotactics is beyond the scope of the current study.

direct borrowing, as done here, or vice versa. That is, the corpus frequencies of complex and simplex loanwords provide equally good evidence for direct borrowing. The absence or rarity of complex loanwords vs. hybrid formations, the absence or rarity of corresponding simplex loanwords, and high token frequencies of complex loanwords vs. simplex loanwords are in themselves indicative of direct borrowing. Note also that such interpretations of synchronic data have to make the assumption that the distribution of relevant loanwords has remained constant since the affix became productive on native stems (§3.4).

Just as complex loanwords are a necessary condition for indirect borrowing, so also is knowledge of the donor language a necessary condition for direct borrowing, since in the absence of such knowledge, the only way to get an affix is from complex loanwords. However, donor-language knowledge cannot be observed as directly as the distribution of loanwords, at least in the case studies presented here, and thus we cannot use it as a criterion for inferring borrowing processes. It is nevertheless worth briefly sketching what the cognitive and sociolinguistic statuses of the languages involved need to be for direct affix borrowing to occur. Winford (2005:385–409) notes that direct affix borrowing typically occurs in bilingual speech communities where the donor language becomes increasingly dominant for recipient-language speakers, and possibly the recipient language also for donor-language speakers. This means that in addition to recipient-language agentivity, donor-language agentivity in the sense of van Coetsem (1988, 2000) and Winford (2002, 2005) might be involved in direct affix borrowing. Specifically, the identification and extraction of an affix may involve recipient-language speakers creating hybrid formations first by using donor-language affixes with recipient-language stems while speaking the donor language, for example, when using a donor-language morphosyntactic frame in code-switching (§6.2). Note that this does not necessarily imply full familiarity with the donor language. Recipient-language speakers may also create hybrid formations while speaking—or code-switching to—the donor language if they had already acquired the donor-language affix, but not yet relevant donor-language stems. The crucial step for direct affix borrowing to occur is that these recipient-language speakers then use these affixes in recipient-language morphosyntactic frames also, creating further hybrid formations. To the extent that the donor language is dominant for these speakers, this process thus also involves donor-language agentivity, but importantly, these speakers also retain a high dominance in the recipient language. These recipient-language speakers furthermore need to be influential among the recipient-language community, so that the spread of the hybrid formations throughout that community is enabled.

The distributions of borrowed affixes are analyzed in the following sections in corpora of Chavacano (Spanish-based creole, Philippines), Resígaro (Arawakan, Amazonia), Quechua (Quechuan, Andes), and Middle English. Additionally, more limited information is provided on the distribution of borrowed affixes in Sakha (Turkic), various Finno-Ugric languages, and Albanian. This selection of languages illustrates the full range of directness of borrowing, even though the sample is small and highly opportunistic, guided by the availability of data.

With respect to what counts as a borrowed affix, any morphologically bound form from a closed class that fulfills a derivational or inflectional function is taken into account here, bearing in mind that it is not always easy to determine whether a given form is bound. All affixes considered here are derivational, reflecting the fact that, overall, derivational affixes are borrowed more often than inflectional affixes. It remains to be seen to what extent the approach taken here also applies to inflectional affixes.

### 3. ONLY OR PRIMARILY DIRECT BORROWING.

**3.1. VISAYAN ORDINAL NUMERAL MARKER *ika-* IN ZAMBOANGUEÑO CHAVACANO.** Zamboangueño Chavacano (called ‘Chavacano’ for short in the following, even though this term also encompasses other varieties of Chavacano) is a Spanish-based creole spoken in the Philippines. During the nineteenth century it came under heavy influence from two Austronesian languages of the Visayan subgroup, Hiligaynon and Cebuano, which not only left traces in the lexicon and syntax, but has also led to the borrowing of a number of affixes (Lipski 1992:221 et passim, Steinkrüger 2003). Among these is the prefix *ika-*, which derives ordinal numerals from cardinal numerals. All cardinal numerals are native, that is, Spanish-based (Riego de Dios 1989:31–32). Therefore this prefix is not attested in complex loanwords (i.e. in combination with borrowed stems), even in large corpora of Chavacano (see §4.3), but only in hybrid formations, for example, *ika-uno* ‘first’, *ika-dos* ‘second’, *ika-tres* ‘third’, *ika-kwátro* ‘fourth’. Furthermore, there is no evidence that Hiligaynon or Cebuano cardinal numerals were ever used in Chavacano. It is therefore very likely that *ika-* was borrowed directly, that is, that it was identified by bilingual Chavacano speakers in Cebuano or Hiligaynon and then used on Chavacano stems, independently of complex loanwords.

**3.2. MONGOLIC SUFFIXES IN SAKHA (TURKIC).** Sakha has borrowed from Mongolian languages a number of affixes, among them *-TA*, which derives multiplicatives from numerals, for example, *bi:rde* ‘once’ (< *bi:r* ‘one’), *ikkite* ‘twice’ (< *ikki* ‘two’), but also from derived forms (e.g. *uončata* ‘approximately ten times’ < *uon-ča* ‘ten-approximative’). No numerals borrowed from Mongolian are attested in the extensive lexical data provided by Kałużyński (1962) or in the corpus of spoken Sakha of approximately 40,000 words compiled by Pakendorf (2007). Consequently, there are no hybrid formations with *-TA* in Sakha, and this strongly indicates that *-TA* entered the language in a process of direct borrowing (see also Pakendorf 2015).

Another Mongolic affix in Sakha is the adjectivizer *-mtIA*. According to Kałużyński (1962:93) and Pakendorf (2015), *-mtIA* is found mainly with Turkic stems, and even derivations from Mongolic roots must have been created in Sakha, because apparently all of these are first derived with Sakha reflexive and similar forms. An example is *baranimtia* ‘ending easily’, which includes the Sakha reflexive marker *-n*. The suffix *-mtIA*, too, was thus apparently also directly borrowed from Mongolian by speakers of Sakha who were bilingual in Mongolian, rather than having entered Sakha via complex loanwords.

**3.3. TURKIC AND RUSSIAN AFFIXES IN FINNO-UGRIC LANGUAGES.** Bereczki (2002) discusses a number of examples from the Volga-Kama area in Russia that he claims cannot be explained as indirect borrowing. No corpus study was performed on these affixes, so we must rely on Bereczki’s (2002) claim as to the absence of complex loanwords in these cases. A first example is the Turkic adverbializer *-sa*, which was borrowed into various Permic (Finno-Ugric) languages. Since no Turkic verb with *-sa* was borrowed into Permic languages, *-sa* must have been borrowed directly. A second set of examples are indefinite-pronoun-forming prefixes that were borrowed across two pairs of languages: the Tatar (Turkic) indefinite-pronoun-forming prefix *ällä-* was borrowed into Eastern Mari (as *ala-*) and Udmurt (as *olo-*); and the Chuvash (Turkic) indefinite-pronoun-forming prefix *ta-* was borrowed into Western Mari (as *ta- ~ tä-*) and the Mordvinic languages (as *ta-*). Finally, Mari also borrowed the ordinal-numeral-forming suffix *-mVš ~ -šV* from Chuvash. Since there is no evidence that Turkic pronouns or numerals were borrowed into any of those languages at any time, it is highly probable that these affixes were borrowed directly.

Another example of direct borrowing given by Berezcki (2002), citing Alvre (2002), is the Russian indefinite-pronoun-forming suffix (or enclitic) *-to*, which was borrowed into Karelian (Finno-Ugric). As in the cases described above, Karelian did not borrow any pronouns from the donor language, in this case Russian, and again, this indicates a high probability of direct borrowing.

**3.4. ALTERNATIVE INTERPRETATIONS OF THE DATA.** It is useful at this point to elaborate on the methodological problem of inferring evidence for direct affix borrowing from the absence of complex loanwords in synchronic data. This inference can be justified by considering alternative interpretations of these data as the result of indirect borrowing. Any alternative explanation would have to make the following three assumptions. First, complex loanwords once existed in the language for a given period of time. Second, the affix they contained was recognized as such by native speakers, who then started to use it on native stems. And third, after this process was completed, all complex loanwords disappeared. While not impossible, such an interpretation has to assume without any evidence that a number of very specific processes occurred in a specific order. Methodologically, it is much more reasonable to make a single assumption that there were never appropriate sets of complex loanwords containing the borrowed affix, and thus to interpret such cases as at least centrally involving direct affix borrowing.

The alternative scenario would be more likely if one additionally assumed that there were only very few complex loanwords (or maybe just one) containing the affix. Such small sets may indeed have disappeared or are at least unattested in available corpora. But then again, indirect borrowing would be less probable precisely because of this low number of complex loanwords, as argued in §2. Further, given the nature of most of the stems to which the affixes discussed in the previous sections attach (numerals and pronouns), it seems unlikely that they would be unattested in corpora or that it would have escaped the attention of linguists specializing in these languages that they were borrowed (see also §6.2). The cases discussed in the previous sections thus provide good evidence that examples of direct borrowing do exist, and we may now proceed to discussing cases where direct borrowing probably contributed to situations of affix borrowing that also involve indirect borrowing to various degrees.

#### 4. DIRECT AND INDIRECT BORROWING.

**4.1. BORA CLASSIFIERS *-ga* AND *-ba* IN RESÍGARO.** Resígaro is an Arawakan language spoken in the Colombian and Peruvian Amazon region. Ethnographic and linguistic evidence suggest that it has been in intense contact with the unrelated language Bora (Boran) for an extended period (Seifart 2011:7–9). Resígaro has only about 5% loanwords from Bora, but has massively borrowed bound grammatical markers, including number markers and classifier suffixes (Aikhenvald 2001, Seifart 2011, 2012). The distributions of two classifiers in a corpus of spoken Resígaro of approximately 15,000 words (Seifart 2009) are summarized in Tables 1–4: the classifier *-ga* ‘plank shape’ and the classifier *-ba*, which is used with nouns denoting fruits, logs, drinks, and a range of other items (see Seifart 2005:181–222 on the semantics of Bora classifiers). Complex loanwords (CL), that is, combinations of the borrowed affix with likewise borrowed stems, are highlighted in boldface in Tables 1 and 3 (and all other tables), setting them apart from hybrid formations (HF), that is, combinations of the borrowed affix with native stems. For each derived word with the borrowed affix, these tables also indicate the number of occurrences of the corresponding stem without the borrowed affix. Tables 2 and 4 (and similar tables following) summarize the distribution of the affixes in the corpus with particular regard to the three criteria under investigation. The ratio of CLs to

HF in the tables is calculated as the number of CLs divided by the number of HFs plus the number of CLs; that is, it corresponds to the percentage of CLs among all words that include the affix. For the cases discussed in the previous sections, this ratio is thus zero (0 CLs/(0 CLs + *n* HFs)).<sup>4</sup>

RESÍGARO WORDS WITH <i>-ga</i>		#	HF/CL	STEM FROM WHICH DERIVED	#
<b>núújigá</b>	<b>'hut'</b>	<b>12</b>	<b>CL</b>	<b>*núúji-</b>	<b>0</b>
váhaga,	'machete'	8	HF	*váha-,	0
váhaadégá				*váhaadé-	
ñahdégá	'festival'	7	HF	ñahdé	'calabash' 7
<b>jaaga</b>	<b>'bird species'</b>	<b>7</b>	<b>CL</b>	<b>*jaa-</b>	<b>0</b>
tseniigá	'the higher beam'	2	HF	tsenií	'high' 20
opiítsiga	'log trap'	2	HF	opiítsi	'trap' 8
<b>máátábaga</b>	<b>'bird species'</b>	<b>2</b>	<b>CL</b>	<b>*máátába-</b>	<b>0</b>
tsipoógá	'?'	2	HF	*tsipoó-	0
ohkóonidégá	'fireplace'	1	HF	ohkóonidé	'fire' 15
pohtsáavagá	'middle finger, four'	1	HF	pohtsáava-	'center' 5
todokáakágá	'toad species'	1	HF	todokáaká	'toad' 2
déheégá	'buttocks'	1	HF	*déheé-	'back' 0
ónéhóoga	'hollow tooth'	1	HF	*ónéhóo	'tooth' 0
dyuishúunéga	'dancing beam festival'	1	HF	*dyuishúuné-	0
ñihshoga	'nightingale'	1	HF	*ñihsho-	0
pohpóotagá	'pona palm tree'	1	HF	*pohpóota-	0
vishíihga	'rock'	1	HF	*vishíih-	'stone' 0

TABLE 1. Nouns formed with Bora classifier *-ga* 'plank shape' in Resígaro, with the number of tokens attested (#).

CRITERION	VALUE
Ratio of complex loanwords to hybrid formations	.18 (3/17)
Complex loanwords paired with a simplex loanword	none
Complex loanwords infrequent relative to their simplex loanword	none

TABLE 2. Summary of distribution of *-ga* 'plank shape' in Resígaro.

RESÍGARO WORDS WITH <i>-ba</i>		#	HF/CL	STEM FROM WHICH DERIVED	#
jigabá	'log trap'	10	HF	*jígá-	0
<b>díñéeneba</b>	<b>'log trap'</b>	<b>7</b>	<b>CL</b>	<b>*díñeene</b>	<b>'crush' (Bora) 0</b>
máágibá	'cahuana drink'	6	HF	mahgi	'cahuana drink (generic)' 5
jimáágiba	'caimito fruit'	3	HF	jimáági	'caimito (generic)' 0
ohtsómaadebá	'larva-log'	2	HF	otsóoma(ade)	'edible larva' 2
<b>gáámujéba</b>	<b>'herb species'</b>	<b>2</b>	<b>CL</b>	<b>*gáámujé-</b>	<b>0</b>
nanaánabá	'pineapple fruit'	1	HF	nanaána	'pineapple (generic)' 13
aváanaba	'wooden log'	1	HF	avána	'wood' 2
<b>dóóllabá</b>	<b>'cocona fruit'</b>	<b>1</b>	<b>CL</b>	<b>*dóólla</b>	<b>'cocona' (Bora) 0</b>
<b>godóómubá</b>	<b>'mushroom'</b>	<b>1</b>	<b>CL</b>	<b>*godóómu-</b>	<b>'mushroom' (Bora) 0</b>
vadakáallebá	'manioc drink'	1	HF	vadakáalle	'manioc (generic)' 0

TABLE 3. Nouns formed with Bora classifier *-ba* 'logs, fruits, drinks, etc.' in Resígaro, with the number of tokens attested (#).

<sup>4</sup> An asterisk in Tables 1 and 3 indicates that the form without the borrowed classifier suffix is not attested in the corpus (zero tokens). A gloss is provided if such a form is attested in other Resígaro data, for example, in elicitation or in Allin's (1976) Resígaro grammar and dictionary (e.g. for *opiítsi* 'trap' in Table 1) or if the form without the borrowed affix is only attested in Bora, but not in Resígaro, for example, *\*díñeene* 'crush' (in Bora) in Table 3. If no gloss is provided, the stem is bound and cannot be used without the classifier in Resígaro or Bora, as for example *\*núúji-* in Table 1. It is not uncommon in Resígaro and Bora that nouns cannot be used without classifiers. Evidence for the identification of classifier suffixes in these nouns comes from the use of the same classifiers as agreement markers in modifiers such as numerals, for example, *sa-bá dóólla-bá* 'one cocona fruit'. The element *-de* in Resígaro stems derives possessed nouns.



CRITERION	VALUE
Ratio of complex loanwords to hybrid formations	.36 (4/11)
Complex loanwords paired with a simplex loanword	none
Complex loanwords infrequent relative to their simplex loanword	none

TABLE 4. Summary of distribution of *-ba* 'logs, fruits, drinks, etc.' in Resígaro.

Tables 2 and 4 show that the ratio of complex loanwords to hybrid formations (criterion 1) is relatively low; that is, complex loanwords make up between about one fifth (.18 for *-ga*) and one third (.36 for *-ba*) of all words containing the borrowed affix. This means that the basis for identifying these affixes in complex loanwords, that is, for indirect borrowing, is reduced when compared to other borrowed affixes described in §5, where this ratio is above .85 or higher.

For none of the attested complex loanwords with *-ba* or *-ga* are corresponding simplex loanwords without *-ba* or *-ga* attested (criterion 2). In fact, all three complex loanwords with *-ga* (Table 1) and two out of the four complex loanwords with *-ba* (Table 3) are built from bound stems that cannot occur without the classifier suffixes in both recipient language Resígaro and donor language Bora. This means that even in larger corpora of Resígaro such pairs could not occur. The remaining two complex loanwords with *-ba* are built from free stems, but these stems are not attested without the classifier in the Resígaro corpora. This absence of pairs of complex and simplex loanwords does not make indirect borrowing impossible, but it does add to its improbability.

With respect to the third criterion, it follows from this absence of corresponding simplex loanwords that all attested complex loanwords are more frequent than any corresponding simplex loanword. This again indicates a low probability of indirect borrowing, since the classifier suffixes in the complex loanwords are less likely to be perceived as segmentable than if they occurred in complex loanwords that had more frequently attested simplex counterparts.

For Resígaro, one can make another argument for direct borrowing based on the semantic range of classifiers. As mentioned above, the classifier *-ba* is polysemous and is used with nouns denoting fruits, logs, drinks, and a range of other items in both Bora and Resígaro. However, the complex loanwords with *-ba* attested in the corpus cover only a small fraction of these meanings (first three columns of Table 3): one attested word denotes a fruit, another a mushroom (perhaps related to the meaning 'fruit'), and another a species of herbs (as one example from the range of other items covered by *-ba*). In hybrid formations, by contrast, *-ba* is attested in all three of the core meanings that it also has in Bora: logs (e.g. *ohtsómaadebá* 'larva-log'),<sup>5</sup> fruits (e.g. *jimáágiba* 'caimito fruit'), and drinks (e.g. *máágibá* 'cahuana drink'). This suggests that Resígaro speakers used their knowledge of Bora to identify the whole range of meanings of *-ba*; that is, that they applied to some extent a direct borrowing strategy.

Similarly, the complex loanwords containing the Bora classifier *-ga* 'plank-shaped' do not provide a good basis for the identification of the semantics of this suffix (Table 1). It is attested in only three complex loanwords. One of these denotes a hut, built from plank-shaped material, but the other two denote bird species. In nouns denoting animal species, Bora classifiers are semantically arbitrary and never used according to their shape-related meanings (Seifart 2005:217–19). In hybrid formations, however, *-ga* is

<sup>5</sup> This noun refers to trunks of the *Mauritia flexuosa* palm, which are felled by Amazonian Indians in order to provide an ideal ground for *Rhynchophorus palmarum* beetles to lay their eggs. From these eggs larvae develop, which are then picked from this trunk and eaten as a delicacy.

systematically used with nouns denoting plank-shaped objects, such as machetes, logs, and beams. Since from the attested complex loanwords alone it would have been difficult for Resígaro speakers to identify the semantics of *-ga*, it is very likely that they also, if not only, relied on their knowledge of Bora to identify the semantics of *-ga*.

In sum, the distributions of *-ba* and *-ga* indicate that they are unlikely to have been indirectly borrowed. This is consistent with observations about their semantic range in the donor and recipient languages<sup>6</sup> and ethnographic evidence about bilingualism through ceremonial exchange and intermarriage (Echeverri 1997, Gasché 2009). Taken together, the various pieces of evidence thus suggest that direct borrowing played an important role in the borrowing of Bora classifiers, probably in addition to indirect borrowing.

**4.2. TURKISH *-qar* IN ALBANIAN.** Albanian was under heavy influence from Turkish during the rule of the Ottoman Empire. It has many loanwords from Turkish (Boretzky 1975a,b) and has also borrowed a number of suffixes from Turkish. Among these is the (originally Persian) suffix *-kâr*, which was borrowed as *-qar* ~ *-çar* into Albanian (Xhuvani & Çabej 1962:84, Boretzky 1975a:265, 267–68). It derives nouns denoting a quality, or a person having a quality, that is denoted by the noun or verb from which it is derived. Examples of hybrid formations with this suffix are *nihmaçar* ‘helper’ (< *ndihmë* ‘help’) and *mundqar* ‘someone who earns his daily bread with effort’ (< *mund* ‘effort’) (Boretzky 1975a:267). The distribution of *-qar* in corpora of Albanian has not been studied, but in a detailed study on the lexicon of Albanian, as documented in late nineteenth- and early twentieth-century dictionaries, Boretzky (1975a,b) shows that only very few complex loanwords, which include those with this suffix, were borrowed from Turkish (criterion 1). Additionally, for some of the complex loanwords that include *-qar*, the corresponding underived form without *-qar* is not attested in Albanian (criterion 2), again indicating reduced likelihood of indirect borrowing. Similarly to Resígaro, direct borrowing thus probably played an important role in the borrowing of *-qar* in Albanian.

**4.3. VISAYAN ADJECTIVIZER *maka-* IN CHAVACANO.** Chavacano (see §3.1) has borrowed from Visayan languages the prefix *maka-*, which derives adjectives from verbs (e.g. *makabringka* ‘causing one to jump’ < *bringka* ‘jump’), from nouns (e.g. *makarisas* ‘funny’ < *risas* ‘laughter’), or from other adjectives (e.g. *makabungul* ‘deafening’ < *bungul* ‘deaf’) (Riego de Dios 1989:40). The distribution of this prefix in a corpus of spoken contemporary Chavacano consisting of roughly 2,500,000 words is summarized in Tables 5 and 6.<sup>7</sup> Table 5 includes in the last column an indication of the etymology of

<sup>6</sup> Given the small size of the Resígaro corpus, it is worth looking also at data from Allin’s (1976) Resígaro dictionary, analyzed in Seifart 2011:67–69. In a total of about 1,590 entries, there are seven complex loanwords with *-ga*: *lladahigá* ‘centipede’, *kásoogá* ‘metal grater’, *núujigá* ‘a shelter, home’, *teégá* ‘table (lit. this plank)’, including three numerals, in which *-ga* refers to the fingers and toes used in counting: *sagá* ‘one (finger)’, *migaakú* ‘two (fingers)’, *feehpákhó migaakú* ‘twelve (lit. from our feet two (toes))’. There are three complex loanwords with *-ba*: *aállabá* ‘trunk of yaripa palm’, *koómobá* ‘signal drum’, *tahakábá* ‘soursop (*Annona muricata*) fruit’. Allin (1976) does not report corresponding simplex loanwords for any of these. There are twenty-three hybrid formations with *-ga* and seven with *-ba*, which cover the whole range of meanings. These data thus confirm the pattern observed in the corpus: fewer complex loanwords than hybrid formations, no simplex loanwords, and reduced semantic range in complex loanwords.

<sup>7</sup> The corpus was compiled for the Chavacano Language Corpus Project (CLCP) by McNeil Technologies. Permission to use this data by McNeil Technologies and facilitation of the data by Patrick Steinkrüger are gratefully acknowledged. Glosses and etymological information in Table 5 come from Hall & Custodio 1911, Riego de Dios 1989, and various online dictionaries of Cebuano, Hiligaynon, and Tagalog (<http://www.bansa.org/dictionaries/ceb/>, <http://www.binisaya.com>, and <http://translate.sandayong.com>). Orthographic variants of the same forms in the corpus were grouped together under the most common form.

the stem. Spanish (Spa) stems are native and thus form hybrid formations with *maka-*. English (Eng) stems are also counted as forming hybrid formations because they entered the language after *maka-*. Cebuano (Ceb), Hiligaynon (Hil), Tagalog (Tag), and unidentified Austronesian (Aus) stems are counted as forming complex loanwords with *maka-*. As in other tables, complex loanwords are highlighted in boldface.

The use of *maka-* in contemporary Chavacano is most probably also influenced by Tagalog, which is closely related to Hiligaynon and Cebuano. Tagalog is the national language of the Philippines, and has been increasingly used in Zamboanga since the mid-twentieth century. In Tagalog, there is also a prefix *maka-*, cognate with the Hiligaynon and Cebuano form.<sup>8</sup> Forms with Tagalog stems are therefore also considered to be complex loanwords in Table 5, although they may have been formed within Chavacano from Tagalog stems and *maka-*, originally borrowed from Cebuano or Hiligaynon.

CHAVACANO WORDS WITH <i>maka-</i>		#	HF/ CL	STEM FROM WHICH DERIVED	#	ETY
makamiedo	'scary'	384	HF	miedo	934	Spa
<b>makahuya</b>	<b>'embarrassing'</b>	<b>210</b>	<b>CL</b>	<b>huya</b>	<b>352</b>	<b>Hil</b>
makarisa	'funny'	164	HF	risa	66	Spa
makalastima	'making regret'	100	HF	lastima	183	Spa
makapeste	'annoying'	24	HF	peste	20	Spa
makarabia	'maddening'	19	HF	rabia	937	Spa
<b>makatamad</b>	<b>'making lazy'</b>	<b>19</b>	<b>CL</b>	<b>tamad</b>	<b>65</b>	<b>Tag</b>
<b>makakwan</b>	<b>'whatchamacallit'</b>	<b>14</b>	<b>CL</b>	<b>kwan</b>	<b>9,396</b>	<b>Ceb</b>
makatriste	'saddening'	14	HF	triste	100	Spa
makallurar	'sad'	12	HF	llurar	605	Spa
makacunsumi	'consume'	11	HF	cunsumi	67	Spa
<b>makasumut</b>	<b>'boring'</b>	<b>7</b>	<b>CL</b>	<b>sumut</b>	<b>10</b>	<b>Aus</b>
<b>makaluya</b>	<b>'weakening'</b>	<b>6</b>	<b>CL</b>	<b>luya</b>	<b>309</b>	<b>Ceb</b>
<b>makaugut</b>	<b>'exciting'</b>	<b>6</b>	<b>CL</b>	<b>ugut</b>	<b>30</b>	<b>Aus</b>
makamiento	'lie'	5	HF	miento	638	Spa
makaboring	'boring'	5	HF	boring	27	Eng
makaentra	'enter'	4	HF	entra	5,305	Spa
makaduele	'hurt'	4	HF	duele	658	Spa
makacre	'credible'	4	HF	cre	234	Spa
makaespanta	'shocking'	4	HF	espanta	86	Spa
makasintimiento	'feeling'	4	HF	sintimiento	77	Spa
makaasko	'disgust'	4	HF	asko	15	Spa
makapensar	'think'	3	HF	pensar	1,263	Spa
makadurmi	'tiring'	3	HF	durmi	915	Spa
makaloko	'crazy'	3	HF	loko	621	Spa
makaentende	'understandable'	3	HF	entende	170	Spa
<b>makabuyung</b>	<b>'making dizzy'</b>	<b>3</b>	<b>CL</b>	<b>buyung</b>	<b>116</b>	<b>Ceb</b>
<b>makabungul</b>	<b>'deafening'</b>	<b>3</b>	<b>CL</b>	<b>bungul</b>	<b>61</b>	<b>Ceb</b>
makanerbiyar	'making nervous'	3	HF	nerbiyar	35	Spa
<b>makalibug</b>	<b>'confusing'</b>	<b>3</b>	<b>CL</b>	<b>libug</b>	<b>9</b>	<b>Ceb</b>
makakansa	'tiring'	2	HF	kansa	1,389	Spa
<b>makasayang</b>	<b>'pitying'</b>	<b>2</b>	<b>CL</b>	<b>sayang</b>	<b>249</b>	<b>Tag</b>
<b>makainggit</b>	<b>'making envious'</b>	<b>2</b>	<b>CL</b>	<b>inggit</b>	<b>71</b>	<b>Tag</b>
makadiscourage	'discouraging'	2	HF	discourage	59	Eng
<b>makalumos</b>	<b>'making drown'</b>	<b>2</b>	<b>CL</b>	<b>lumos</b>	<b>21</b>	<b>Ceb</b>
makaabla	'speak'	1	HF	abla	25,941	Spa

(TABLE 5. *Continues*)

<sup>8</sup> In Tagalog *maka-* appears to be related to *ma-*, which seems to be the more common form. Himmelmann (1987:126) treats *ma-* and *maka-* together. According to Naylor (2005:424), Tagalog *maka-* is made up of two prefixes, *ma-* and *ka-*.

CHAVACANO WORDS WITH <i>maka-</i>		#	HF/ CL	STEM FROM WHICH DERIVED		#	ETY
makamuri	'deathly'	1	HF	muri	'die'	2,293	Spa
makamalo	'bad'	1	HF	malo	'bad'	1,189	Spa
makapobre	'poor'	1	HF	pobre	'poor'	901	Spa
makagana	'gain'	1	HF	gana	'gain'	793	Spa
makasingko	'five'	1	HF	singko	'five'	636	Spa
makasinti	'feel'	1	HF	sinti	'feel'	581	Spa
makaaguanta	'endure'	1	HF	aguanta	'endure'	398	Spa
makakansao	'tiredness'	1	HF	kansao	'tiredness'	366	Spa
makaout	'out'	1	HF	out	'out'	342	Eng
makaatende	'attend'	1	HF	atende	'attend'	277	Spa
makainterer	'interest'	1	HF	interes	'interest'	189	Spa
makamasa	'knead'	1	HF	masa	'knead'	106	Spa
makajoin	'join'	1	HF	join	'join'	77	Eng
makaimagine	'imagine'	1	HF	imagine	'imagine'	71	Eng
makaultraha	'offensive'	1	HF	ultraha	'offend'	58	Spa
makaimbidia	'envy'	1	HF	imbidia	'envy'	52	Spa
<b>makabuhay</b>	<b>'making alive'</b>	<b>1</b>	<b>CL</b>	<b>buhay</b>	<b>'alive'</b>	<b>44</b>	<b>Tag</b>
<b>makabusog</b>	<b>'filling'</b>	<b>1</b>	<b>CL</b>	<b>busog</b>	<b>'full'</b>	<b>21</b>	<b>Ceb</b>
makaentretene	'entertaining'	1	HF	entretene	'entertaining'	14	Spa
<b>makalula</b>	<b>'making dizzy'</b>	<b>1</b>	<b>CL</b>	<b>lula</b>	<b>'dizziness'</b>	<b>10</b>	<b>Tag</b>
makaintriga	'intrigue'	1	HF	intriga	'intrigue'	9	Spa
<b>makaguniguni</b>	<b>'giving imagination'</b>	<b>1</b>	<b>CL</b>	<b>guniguni</b>	<b>'imagination'</b>	<b>4</b>	<b>Tag</b>
makacon- sumicion	'consuming'	1	HF	consumicion	'consumption'	1	Spa
makathrilling	'thrilling'	1	HF	thrilling	'thrilling'	1	Eng
makadulor	'painful'	1	HF	dulor	'pain'	0	Spa

TABLE 5. Formations with Visayan adjectivizer *maka-* in Chavacano, with the number of tokens attested (#) and the source language (ETY).

CRITERION	VALUE
Ratio of complex loanwords to hybrid formations	.26 (16/61)
Complex loanwords paired with a simplex loanword	for 100% (16/16)
Complex loanwords infrequent relative to their simplex loanword	for 100% (16/16)

TABLE 6. Summary of distribution of adjectivizer *maka-* in Chavacano.

Tables 5 and 6 show that for Chavacano *-maka-*, the ratio of complex loanwords to hybrid formations is relatively low (.26), comparable to that for Resígaro classifier suffixes, indicating reduced probability of indirect borrowing. Unlike Resígaro classifier suffixes, however, underived simplex loanwords without *maka-* are attested in the corpus for all complex loanwords (criterion 2). Additionally, all complex loanwords are used less frequently than their corresponding simplex loanwords (criterion 3), unlike Resígaro. The distribution of *maka-* in terms of criteria 2 and 3 thus indicates a high probability of indirect borrowing.

In sum, while the ratio of complex loanwords for Chavacano *maka-* (.26) is comparable to that of Resígaro classifier suffixes (.18, .36), the probability of indirect borrowing is higher in Chavacano for two reasons: first, its distribution in terms of criteria 2 and 3 shows evidence of indirect borrowing, and second, the borrowed affix occurs with its entire semantic range (which is small) in complex loanwords in Chavacano. There are two reasons to believe that direct borrowing might nevertheless have played a role in borrowing *maka-*: first, if Chavacano speakers knew Hiligaynon and Cebuano, and more recently probably also Tagalog, very well, as appears to have been the case, then they may

also have applied their knowledge of these languages in identifying *maka-*. Second, the ratio of complex loanwords to hybrid formations is still considerably lower than in other cases of affix borrowing that are discussed in the following section.

## 5. PRIMARILY OR ONLY INDIRECT BORROWING.

**5.1. SPANISH *-ero* IN NORTHERN CHINCHAY QUECHUA.** Various Spanish suffixes were borrowed into two closely related dialects of Northern Chinchay Quechua spoken in Ecuador: Imbabura Quechua (Northern Highlands) and Quechua of Bolívar (Central Highlands). Bakker and Hekking (2012:197–215) obtained a corpus of almost 80,000 words of spoken data by interviewing native speakers from different age and gender groups, with different educational and professional backgrounds. They found four Spanish affixes that are used on native Quechuan stems. For the purposes of the current study, Dik Bakker has analyzed in detail the distribution of one of these, *-ero/-era* (and the Quechuanized variants *-eru*, *-iro*, *-iru*, *-ira*) ‘agent noun’, in this corpus (Tables 7 and 8).<sup>9</sup>

NORTHERN CHINCHAY QUECHUA WORDS	#	HF/CL	STEM FROM WHICH DERIVED	#	
WITH <i>-ero</i>					
<b>compañero/a</b>	<b>35</b>	<b>CL</b>	<b>compania</b>	<b>‘company’</b>	<b>2</b>
huasipunguero	10	HF	huasipungo	‘piece of land’	8
<b>extranjero/u</b>	<b>10</b>	<b>CL</b>	<b>extraño</b>	<b>‘strange’</b>	<b>0</b>
yanapero	8	HF	yanapay	‘serve’	8
<b>llavero/u</b>	<b>8</b>	<b>CL</b>	<b>llave</b>	<b>‘key’</b>	<b>0</b>
<b>ladera</b>	<b>7</b>	<b>CL</b>	<b>lado</b>	<b>‘side’</b>	<b>72</b>
<b>estanquero/a</b>	<b>7</b>	<b>CL</b>	<b>estanco</b>	<b>‘alcohol shop’</b>	<b>11</b>
<b>almosera</b>	<b>7</b>	<b>CL</b>	<b>almosa</b>	<b>‘alms’</b>	<b>1</b>
<b>herrero</b>	<b>6</b>	<b>CL</b>	<b>hierro</b>	<b>‘iron’</b>	<b>0</b>
chacarero	5	HF	chakra	‘farm’	21
<b>quesero/a</b>	<b>5</b>	<b>CL</b>	<b>queso</b>	<b>‘cheese’</b>	<b>5</b>
<b>potrero</b>	<b>5</b>	<b>CL</b>	<b>potro</b>	<b>‘young horse’</b>	<b>0</b>
<b>pifanero</b>	<b>4</b>	<b>CL</b>	<b>pifano</b>	<b>‘fife’</b>	<b>7</b>
<b>frutera</b>	<b>4</b>	<b>CL</b>	<b>fruta</b>	<b>‘fruit’</b>	<b>4</b>
<b>torero/u</b>	<b>3</b>	<b>CL</b>	<b>toro</b>	<b>‘bull’</b>	<b>40</b>
<b>ropero</b>	<b>3</b>	<b>CL</b>	<b>ropa</b>	<b>‘clothes’</b>	<b>30</b>
<b>cocinera</b>	<b>3</b>	<b>CL</b>	<b>cocina</b>	<b>‘kitchen’</b>	<b>3</b>
<b>pollera</b>	<b>3</b>	<b>CL</b>	<b>pollo</b>	<b>‘chicken’</b>	<b>3</b>
<b>lucero</b>	<b>3</b>	<b>CL</b>	<b>luz</b>	<b>‘light’</b>	<b>2</b>
<b>partera</b>	<b>3</b>	<b>CL</b>	<b>parto/u</b>	<b>‘birth’</b>	<b>1</b>
<b>ingeniero/u</b>	<b>3</b>	<b>CL</b>	<b>ingenio</b>	<b>‘machine’</b>	<b>0</b>
<b>haciennero</b>	<b>2</b>	<b>CL</b>	<b>hacienda</b>	<b>‘estate’</b>	<b>220</b>
<b>escuelero</b>	<b>2</b>	<b>CL</b>	<b>escuela</b>	<b>‘school’</b>	<b>115</b>
warminero	2	HF	warmi	‘woman’	78
<b>soltero/u/a</b>	<b>2</b>	<b>CL</b>	<b>suelto</b>	<b>‘loose’</b>	<b>18</b>
<b>valeru/a</b>	<b>2</b>	<b>CL</b>	<b>bala</b>	<b>‘ball(?)’</b>	<b>10</b>
cuyera	2	HF	cuy	‘guinea pig’	6
<b>chanchera</b>	<b>2</b>	<b>CL</b>	<b>chancho</b>	<b>‘pig’</b>	<b>0</b>
<b>criadero</b>	<b>2</b>	<b>CL</b>	<b>criar</b>	<b>‘bring up’</b>	<b>0</b>
<b>lindero</b>	<b>2</b>	<b>CL</b>	<b>linde</b>	<b>‘limit’</b>	<b>0</b>
<b>ojalatero</b>	<b>2</b>	<b>CL</b>	<b>ojalata</b>	<b>‘tin’</b>	<b>0</b>
<b>cuitero</b>	<b>2</b>	<b>CL</b>	<b>cuita</b>	<b>‘hard work’</b>	<b>0</b>
<b>comunero</b>	<b>1</b>	<b>CL</b>	<b>comuna</b>	<b>‘community’</b>	<b>159</b>

(TABLE 7. *Continues*)

<sup>9</sup> The three other borrowed affixes described by Bakker and Hekking (2012) are *-dor* ‘deverbal agent noun derivation’, diminutive *-ito* (and others), and plural *-s*, all of which have distributions similar to *-ero/-era* ‘agent noun’.

NORTHERN CHINCHAY QUECHUA WORDS		#	HF/CL	STEM FROM WHICH DERIVED		#
WITH <i>-ero</i>						
qelqero	'writer'	1	HF	qelka, killka	'write'	30
semanero	'weekly paid worker'	1	CL	semana	'week'	29
bandolero	'bandit'	1	CL	banda	'criminal gang'	27
millmero	'wool worker or seller'	1	HF	millma	'wool, hair'	18
viajero	'traveler'	1	CL	viaje	'trip'	14
capillero	'chapel keeper'	1	CL	capilla	'chapel'	11
aguacero	'heavy rain'	1	CL	agua	'water'	6
pasajero	'passenger'	1	CL	pasaje	'passage'	6
vaquero	'cowboy'	1	CL	vaca	'cow'	5
metero	'one who puts inside'	1	CL	meter	'put inside'	3
bombero	'fireman'	1	CL	bomba	'pump'	2
fabriquero	'factory owner'	1	CL	fabrica	'factory'	1
lanero	'wool seller'	1	CL	lana	'wool'	1
ovejero	'shepherd'	1	CL	oveja	'sheep'	1
pandillero	'gang member'	1	CL	pandilla	'gang'	1
ratero	'thief'	1	CL	rata/raton	'rat/mouse'	1
tamborero	'drum player'	1	CL	tambor	'drum'	1
buyero	'ox keeper, ox stall'	1	CL	buey	'ox'	0
carnicero	'butcher'	1	CL	carne	'meat'	0
fullero	'liar'	1	CL	fulla	'lie'	0
chamulleru	'liar'	1	CL	chamullar	'lie'	0

TABLE 7. Nouns formed with *-ero* 'agent noun' in Northern Chinchay Quechua, with the number of tokens attested (#).

CRITERION	VALUE
Ratio of complex loanwords to hybrid formations	.87 (47/54)
Complex loanwords paired with a simplex loanword	for 70% (33/47)
Complex loanwords infrequent relative to their simplex loanword	for 40% (19/47)

TABLE 8. Summary of distribution of *-ero* 'agent noun' in Northern Chinchay Quechua.

The ratio of complex loanwords to hybrid formations is much higher for *-ero/-era* in Northern Chinchay Quechua (.87) than for the borrowed affixes discussed in the previous sections (0/.18/.26/.36) (criterion 1), indicating a high probability of indirect borrowing. Unlike for Resígaro classifiers, pairs of complex and simplex loanwords are attested (criterion 2), and in many cases, the complex loanwords are relatively infrequent (criterion 3). Compared to Chavacano *maka-*, however, the values for these two criteria are somewhat lower for *-ero/-era* in Northern Chinchay Quechua: simplex loanwords are only attested for 70% of the complex loanwords (vs. 100% for Chavacano *maka-*). That is, there are proportionally fewer pairs of complex and simplex loanwords. Also, complex loanwords are infrequent relative to simplex loanwords for only 40% of the complex loanwords (vs. 100% for Chavacano *maka-*), which indicates relative difficulty of affix identification in complex loanwords.

Despite the relatively low values for criteria 2 and 3, the overwhelmingly high ratio of complex loanwords (.87 vs. 0/.18/.26/.36) strongly suggests that complex loanwords were the primary source for Northern Chinchay Quechua speakers to identify *-ero/-era* before using it on native stems—that is, that they applied an indirect borrowing strategy. This should not be taken as evidence for the impossibility of direct borrowing, though. If Ecuadorian Quechua speakers had a good knowledge of Spanish at the time of the spreading of the affix, which a great majority of them nowadays have, they could have used a direct borrowing strategy in addition to an indirect borrowing strategy for the identification of *-ero/-era* as an agent noun suffix.

**5.2. NORMAN FRENCH *-age* IN MIDDLE ENGLISH.** Compared to the cases discussed so far, a vast amount of information on French affixes in English is available in historical corpora, which have to some extent already been analyzed with respect to borrowed affixes (e.g. Dalton-Puffer 1996, Ciszek 2008, Palmer 2009). These data enable the use of historical dates of an affix's earliest attestation in the analysis.

Here, the distribution and earliest attestations of the Norman French suffix *-age* are analyzed, a suffix that derives abstract nouns from verbs, adjectives, or other nouns. Tables 9 and 10 summarize the distribution of nouns formed with *-age* in the Early Middle English period up to 1350.<sup>10</sup> This period covers the roughly three centuries following the occupation of England by Norman French speakers. In data from this period, the effects of one single contact event can thus be observed, while newer data involve additional complications caused by later waves of French loanwords (Kastovsky 2006:169) and an increasing influence of Latin.

EARLY MIDDLE ENGLISH WORDS	HF/	#	1ST	STEM FROM WHICH DERIVED	#	1ST		
WITH <i>-age</i>	CL		ATT			ATT		
heritāġe	'heritage'	CL	24	1225	heriten	'inherit'	0	1400
hōstāġe	'hostage'	CL	18	1300	(L obsidātus)	'hostageship'	0	
messāġe	'message'	CL	16	1330	(L missaticum)	'message'	0	
parāġe;	'rank, descent';	CL	10	1250	per	'equal, pair'	17	1300
disparāġe	'disgrace'							
ōutrāġe	'violence to others'	CL	10	1300	outrē	'outer, outside'	8	1225
pilgrimāġe	'pilgrimage'	CL	9	1275	pilgrim; pelerin	'pilgrim'	18	1225
treuāġe	'payment'	CL	9	1300	treu(e)	'payment, toll'	0	1380
homāġe	'showing faithfulness'	CL	8	1330	(A-N home)	'man'	0	
langāġe	'language'	CL	8	1300	lange	'language, tongue'	0	1400
servāġe	'servitude'	CL	7	1300	serve(n)	'to be of service'	94	1175
barnāġe	'nobility'	CL	7	1300	baroniē	'status of a baron'	6	1300
mariāġe	'marriage'	CL	7	1300	marīen	'marry'	4	1325
visāġe	'face'	CL	7	1278	vis	'human face'	2	1330
avauntāġe	'advantage'	CL	7	1300	avaunt	'forward, ahead'	0	1393
beverāġe	'drink, liquor'	CL	6	1237	bever	'a drink or beverage'	0	1451
ūsāġe	'usage'	CL	5	1325	usen	'use, speak, practice'	33	1300
potāġe	'dish made in pot'	CL	5	1230	pot	'a pot, vessel'	17	1225
passāġe	'passage'	CL	4	1300	passen	'to move'	53	1230
hermitāġe	'a hermit's habitation'	CL	4	1280	hermit	'hermit'	3	1275

(TABLE 9. *Continues*)

<sup>10</sup> Data come from the *Middle English Dictionary online*, which is based on Kurath et al. 1952–2001 and published online at <http://quod.lib.umich.edu/m/med/>. The *Middle English Dictionary* is based on roughly two million words of pre-1350 Middle English. Additional information on etymology comes from the *Oxford English Dictionary*. An earlier study by Ciszek (2008:112–16, 124) found far fewer items with *-age* in the *Middle English Dictionary*, but still concluded that *-age* was already productively used on native stems in Middle English, in contrast to Dalton-Puffer (1996), who, based on an analysis of the Helsinki corpus, essentially concluded that French affixes were not productively used on native stems in Middle English.

EARLY MIDDLE ENGLISH WORDS WITH <i>-age</i>	HF/ CL	#	1ST ATT	STEM FROM WHICH DERIVED	#	1ST ATT
<b>lināġe</b>	CL	3	1330	<b>line</b>	5	1325
<b>taillāġe</b>	CL	3	1300	<b>taille</b>	3	1325
<b>damāġe</b>	CL	3	1330	<b>damagen</b>	1	1330
<b>rīvāġe</b>	CL	2	1330	<b>rive</b>	6	1237
<b>arrērāġe</b>	CL	2	1325	<b>arrere</b>	3	1300
<b>vīāġe</b>	CL	2	1300	<b>(L viaticum)</b>	0	
<b>gavelāġe</b>	HF	1	1298	<b>gāvel</b>	52	1121
<b>tollāġe</b>	HF	1	1325	<b>tol(len)</b>	22	1100
<b>costāġe</b>	CL	1	1325	<b>cōst</b>	12	1225
<b>cartāġe</b>	HF	1	1305	<b>cart</b>	12	1150
<b>lestāġe</b>	HF	1	1252	<b>lest</b>	11	1300
<b>cosināġe</b>	CL	1	1350	<b>cosine</b>	9	1300
<b>mēnāġe</b>	CL	1	1325	<b>manēr</b>	8	1300
<b>fāldāġe</b>	HF	1	1268	<b>fōld</b>	7	1225
<b>vileināġe</b>	CL	1	1325	<b>vilein</b>	6	1325
<b>socāġe</b>	HF	1	1325	<b>soc, soca</b>	1	1241
<b>fōrāġe</b>	CL	1	1350	<b>(&lt; OF fourrage &lt; feurre + -age)</b>	0	
<b>corāġe</b>	CL	1	1340	<b>(&lt; OF &lt; L *corāticum, &lt; cor)</b>	0	
<b>curtilāġe</b>	CL	1	1330	<b>(&lt; OF cortil, courtil)</b>	0	
<b>companāġe</b>	CL	1	1325	<b>(&lt; L compānāticum &lt; com- + pān)</b>	0	
<b>vesināġe</b>	CL	1	1325	<b>visnē</b>	0	1449

TABLE 9. Nouns formed with *-age* in Early Middle English, with the number of tokens attested (#) and date of first attestation (1ST ATT). L: Latin, A-N: Anglo-Norman, OF: Old French.

CRITERION	VALUE
Ratio of complex loanwords to hybrid formations	.85 (34/40)
Complex loanwords paired with a simplex loanword	for 58% (20/34)
Complex loanwords infrequent relative to their simplex loanword	for 38% (13/34)

TABLE 10. Summary of distribution of *-age* in Early Middle English.

Tables 9 and 10 show that *-age* had a distribution in Early Middle English very similar to that of *-erol/-era* in Northern Chinchay Quechua: in both cases complex loanwords outnumber hybrid formations by far. This differs markedly from borrowed affixes in Chavacano, Bora, and other cases discussed above (criterion 1). For many complex loanwords there are corresponding simplex loanwords (criterion 2), and these are relatively infrequent in at least some cases (criterion 3). As noted with respect to Northern Chinchay Quechua, this distribution strongly suggests that complex loanwords formed the primary, if not the only, basis for the use of the affix on native stems, that is, for indirect borrowing.



However, the two earliest attestations of hybrid formations, *lestāge* ‘toll, tax’ (1252) and *faldāge* ‘rent paid for a fold’ (1268), are predated by only a few years by just three complex loanwords, *heritāge* ‘heritage’ (1225), *potāge* ‘dish made in pot’ (1230), and *parāge* ‘rank, descent’ (1250). This means that either indirect borrowing operated quickly and on a reduced basis, or that direct borrowing might have played a role in addition to indirect borrowing. The dating of Early Middle English documents is only approximate, and a word might have entered the language long before it is attested in corpora. But these restrictions apply equally to complex loanwords and hybrid formations, so these dates can actually be taken as indications that direct borrowing may have played a role in addition to indirect borrowing.

Another indication of some influence of direct borrowing is that the morphological and semantic relationships between many of the derived and underived forms in Early Middle English are rather complex (compared to, for example, those in Northern Chinchay Quechua), complicating the extraction of *-age* and thus hindering indirect borrowing.

## 6. DISCUSSION.

**6.1. A SCALE OF DIRECTNESS OF AFFIX BORROWING.** Figure 3 proposes a scale of directness of affix borrowing. It sets up two theoretical extremes, hypothetical pure direct borrowing and hypothetical pure indirect borrowing, and then fits the data discussed in previous sections within these extremes, similar to what is being done in CANONICAL TYPOLOGY (see e.g. Brown et al. 2013).

DIRECTNESS OF BORROWING:	DIRECTIONS OF AFFIX BORROWING				
	DIRECT BORROWING			INDIRECT BORROWING	
COMPLEX LOANWORDS:	none	few	few	many	many
FREQUENT SIMPLEX LOANWORDS:	none	none	many	many	many
KNOWLEDGE OF DONOR LANGUAGE:	yes	yes	yes	yes	no
EXAMPLES:	Sakha <i>-TA</i> , Chavacano <i>ika-</i>	Resígaro <i>-ba, -ga</i>	Chavacano <i>maka-</i>	Quech. <i>-ero</i> , Engl. <i>-age</i>	?

FIGURE 3. A scale of directness of affix borrowing.

In hypothetical cases of pure direct borrowing, to the left in Fig. 3, speakers rely entirely on their knowledge of the donor language, not on complex loanwords within their native (recipient) language, for the identification of an affix. Knowledge of the donor language is therefore a necessary condition for pure direct borrowing. In hypothetical cases of pure indirect borrowing, to the right, speakers rely entirely on complex loanwords within their native (recipient) language for the identification of an affix, with no influence of the donor language at the time of the spread of the affix to native stems. As indicated in the top part of Fig. 3, it is probably true in most cases that both direct borrowing (reliance on donor language) and indirect borrowing (reliance on complex loanwords) contribute, and the aim is thus to estimate the relative contribution of each of these processes.

In the approach taken here, both the occurrence of borrowed affixes in hybrid formations and complex loanwords, and the occurrence of corresponding simplex loanwords, are the primary, empirically observable indicators of the probability of indirect affix borrowing. If no complex loanwords that would include the borrowed affix are attested, this is a strong indicator of direct borrowing. The larger the number of complex loanwords (moving to the right in Fig. 3), the more likely is an increasing contribution of indirect borrowing. Among affixes that are attested in complex loanwords, we can identify two groups. In the first group, complex loanwords are a minor subset, up to about one third, of the words that contain the affix (Resigaró classifier suffixes *-ba*, *-ga* and Chavacano *maka-*), indicating a limited contribution of indirect borrowing. In the second group, complex loanwords constitute 85% or more of the words that contain the affix (Quechua *-ero*, English *-age*), indicating a large contribution of indirect borrowing.

Two further distributional criteria that indicate possibility of indirect borrowing are (i) the presence of corresponding simplex loanwords without the borrowed affix, and (ii) the relatively infrequent use of complex loanwords when compared to the simplex forms. These two criteria are summarized as ‘frequent simplex loanwords’ in Fig. 3. They allow us to differentiate between affixes with comparable proportions of complex loanwords. For Resigaró classifier suffixes, there are no corresponding simplex loanwords attested. Therefore indirect borrowing is less likely in this case than for the Chavacano adjectivizer *maka-*, for which many corresponding simplex loanwords are attested, almost all of which are frequent when compared to the corresponding complex loanwords.<sup>11</sup>

As noted above, knowledge of the donor language (bottom of Fig. 3) is necessary for pure direct borrowing. Even if indirect borrowing is likely to have been the primary process, direct borrowing may also contribute to affix identification as long as there is relevant knowledge of the donor language by speakers of the recipient language at the time of the spread of the affix to native stems. It may even be argued that such knowledge would necessarily be used for the creation of hybrid formations. Let us assume, for example, that there was a speaker of Middle English in 1325 who knew Norman French well and thus knew many words such as *parsonage* ‘maintenance granted to a parson’ and *silvāġe* ‘wild country’ (neither of which is attested in Middle English at that time). Why would this knowledge not have contributed (in addition to his knowledge of complex loanwords with *-age* already present in Middle English by 1325) when he coined *tollāġe* ‘tax or toll’ from native English *tol* ‘tax’? He would thus have used a direct borrowing strategy in addition to an indirect borrowing strategy.

For this reason, hypothetical pure indirect borrowing, as one theoretical extreme in Fig. 3, is conceived of as entailing the absence of relevant knowledge of the donor language. Such cases of extreme indirectness may exist, but would be difficult to identify in the absence of very detailed historical information about which particular members of a speech community had what kind of knowledge of the donor language, and who exactly coined the hybrid formations. The approach taken here is thus to assume that

<sup>11</sup> Note that the values of these two criteria do not correlate in a strict sense with the ratios of complex loanwords in the small sample of languages considered here. The values for the criteria of simplex loanwords and their relative frequency are in fact lower for the two cases with the highest ratios of complex loanwords (Quechua *-ero* and English *-age*) than for Chavacano *maka-*, which has a much lower ratio of complex loanwords. This can only partially be due to corpus size; that is, more corresponding simplex loanwords may be found in larger corpora of Quechua and English, but it is unlikely that they would be more frequent than the corresponding complex loanwords attested in the available corpora.

affix borrowing usually involves both direct and indirect processes, and to assess the relative contribution of each of these processes.

**6.2. ADDITIONAL FACTORS.** The scale proposed in Fig. 3 aims to capture one dimension of variation within the complex phenomenon of affix borrowing. To what extent an affix is borrowed directly or indirectly may also depend on a number of other factors. From the discussion of the case studies above three factors emerge.

**(i) Stems from closed classes vs. stems from open classes:** If an affix attaches only to stems from closed classes, such as numerals or pronouns, it is more likely to be borrowed directly. In fact, among the eight examples described as only or primarily direct borrowing in §3, seven attach only or primarily to closed-class stems (ordinal and multiplicative numeral-forming affixes and five affixes forming indefinite pronouns). There are no cases of affixes that only attach to closed-class stems among the cases of indirect borrowing (§§4–5). The different behavior of closed-class stems is also clearly illustrated by Visayan *ika-* in Chavacano, which only attaches to the closed class of numerals, forming ordinal numerals, and which was borrowed directly, while another affix in the same language (the adjectivizer *maka-*) was borrowed to a considerable degree indirectly. There are two reasons why closed-class stems give rise to direct borrowing. First, stems from closed classes, for example, pronouns or numerals, are less often borrowed than stems from open classes, such as nouns or verbs. If stems are not borrowed, then there are no complex loanwords, and the only way to borrow the affix is to borrow it directly. And second, even if stems from closed classes were borrowed, there would be considerably fewer types of these for borrowed affixes to attach to, precisely because they are from small, closed classes; that is, there are fewer complex loanwords on which to base a process of indirect borrowing.

**(ii) Avoidance of lexical borrowing:** Stems may be resistant to borrowing, not only for structural reasons, but also because of cultural traditions that inhibit lexical borrowing. Such restrictions are responsible for the pattern of minimal lexical and massive morphological borrowing from Bora into Resígaro (Seifart 2011:88). As a consequence, there are few complex loanwords in Resígaro, and affix borrowing was thus probably at least in part direct. This factor together with the first one shows that directness of affix borrowing crucially also depends on the borrowability of the corresponding stems.

**(iii) Mutual borrowing:** Hybrid formations may be first formed in the donor languages (as combinations of loanwords with native affixes, which is a common process), from which they are then borrowed back into the recipient language. Two such cases are Middle English *lodmanāge* ‘cost of pilotage’ (1325) and *feriāge* ‘passage money’ (1330), which are first attested in Anglo French and only later in Middle English. Bakker and Hekking (2012:200) suggest that the Spanish-Quechua hybrid *warminero* ‘womanizer’ might also have been formed first in Spanish, and only later occurred in Quechua (§5.1). Note that in these two cases only some of the hybrid formations with these affixes are first attested in the donor language (one for Quechua/Spanish *-ero*, two for English/French *-age*), while other hybrid formations with these affixes are first attested in the recipient languages, suggesting that mutual borrowing may be a contributing factor, but perhaps not the only process involved.

**7. CONCLUSION.** This article proposes that direct and indirect affix borrowing are not categorically opposed, but two endpoints on a single scale. In this view, direct borrowing, that is, the extraction of an affix from knowledge of the donor language and its subsequent use on native stems, may contribute to affix borrowing to varying degrees. This

is fully in line with approaches to language contact that attribute ‘the selection of entire codes and of individual structures of language—constructions, word-formations, intonation, and so on—to goal-oriented activity’ (Matras 2009:3), in which ‘bilinguals ... strive for the absolute liberty to use [their] entire linguistic repertoire freely’ (Matras 2009: xiii). It is this liberty that speakers take when they apply their knowledge of a second language, as well as their knowledge of complex loanwords within their first language, to create new hybrid formations; that is, when they use direct and indirect borrowing strategies. In some cases considered here, the data indicate a high degree of likelihood that direct borrowing was the primary or even the only process involved, namely, when complex loanwords—as the basis for indirect borrowing—are not attested.

The criteria proposed here to assess the relative probability of types of borrowing processes are based on the distribution of borrowed affixes in corpora and informed by findings from morphological productivity. Semantic properties of affixes such as polysemy proved to be useful in further evaluating the probability of directness of affix borrowing. These criteria cannot provide secure evidence for what happened in the undocumented past history of languages, but they do allow us to assess the relative contribution of direct and indirect affix borrowing processes. Further case studies might enable more nuanced calibration, in particular if historical information is available.

These criteria also help to clarify in what respects the process of affix borrowing is different from borrowing free words, namely, that it crucially involves the recognition of the form and function of an affix in complex words. This is constrained by type and token frequencies of these words as well as corresponding simplex words. This recognition may be based on donor language material directly, as well as on loanwords that were borrowed at an earlier stage.

This study lays the foundation for investigating the interaction between HOW affixes are borrowed and regularities regarding WHICH affixes tend to be borrowed, as typically expressed in borrowing hierarchies, such as [derivation > inflection], [concrete meaning > abstract meaning], and [clearly segmentable affixes > fusional affixes]. One hypothesis is that the dimension of directness of borrowing is orthogonal to such hierarchies. That is, we would expect, for instance, that clearly segmentable affixes are more often borrowed than fusional affixes, both under direct and indirect borrowing, and the position of an affix on the borrowing hierarchy would thus not predict the directness of borrowing. Similarly, one could test whether structural-typological similarities between donor and recipient language increase the probability of direct borrowing any more than they increase the probability of affix borrowing in general (as suggested by e.g. Adelaar 1987, Kossmann 2013). Further work could also show whether the existence of native equivalents to a borrowed affix, and the integration of the borrowed affix into a paradigmatic system of the recipient language, have different effects in direct vs. indirect borrowing.

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