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A correlation between applicative marker types and word order patterns: diachronic perspective

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Abstract

To date, not enough attention has been paid to applicative marker types in comparison to other parameters yielding the diversity of applicative constructions within and across languages. This study, through analysis of a sample of 50 languages that have applicative markers, uncovered that there is a correlation between applicative marker types and word order patterns. Specifically, applicative prefixes generally co-occur with OV/postpositions whereas applicative suffixes co-occur with both VO/prepositions and OV/postpositions to similar extents. The present study offers a diachronic explanation for this phenomenon by discussing, with examples, the following facts. First, applicative prefixes and applicative suffixes often develop from postpositions and prepositions, respectively. Second, applicative suffixes can develop from second or final verbs (in many cases, "give") in 'benefactive applicative periphrases'. Implications of these findings in relation to known correlations concerning word order patterns are also suggested.

Keywords: applicative markers, word order, implicational universals, diachronic typology.

1. *Introduction*

Applicative markers are verbal affixes marking *applicative constructions*, constructions defined as follows:

> a means some languages have for structuring clauses which allow the coding of a thematically peripheral argument or adjunct as a core-object argument. Such constructions are signalled by overt verbal morphology. (Peterson, 2007: 1)

Consider the following example from Wolof. Although (1a) and (1b) have the same propositional meanings, they are morphosyntacti-

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cally different: "with a spoon" is expressed as an adjunct with the preposition in (1a), while it is expressed as a core-object argument owing to the applicative suffix in (1b). (1b) is an applicative construction. NPs which were made core arguments in applicative constructions, like *kuddu* "spoon" in (1b), are generally called *applied objects* or *applied arguments*.

(1) Wolof (Atlantic-Congo, Senegal/Gambia/Mauritania)[1]

a. *mungi* *lekk* AG *kuddu*
PRES.3SG eat with spoon
"He is eating with a spoon."

(Comrie, 1985: 318)

b. *mungi* *lekk-E* *kuddu*
PRES.3SG eat-APPL spoon
"He is eating with a spoon."

(Comrie, 1985: 318)

Applicative constructions are known to differ from each other across and within languages according to various morphosyntactic or semantic parameters, including: semantic roles of the applied argument, valency of the base verb, obligatoriness of the applicativization, object properties of the applied argument etc. (e.g. Palmer, 1994: 161-168; Payne, 1997: 186-191; Creissels, 2006: 73-84; Peterson, 2007; Kiyosawa and Gerdts, 2010: 329-360; Dixon, 2012: 294-342; Polinsky, 2013; Song, 2018: 383-391; Zúñiga and Kittilä, 2019: 53-70). Of these parameters, the present study focuses on the parameter of *type of applicative marker*. Despite its relative transparency, typological literature has not focused on this parameter as much as one may expect. Correlations of applicative marker types with any grammatical phenomena have never been proposed in previous studies, including Peterson (2007: 172-230) and Polinsky (2013), who deal with a lot of sample languages having applicatives (50 languages and 83 languages, respectively).

[1] Throughout the study, applicative markers and other relevant elements (such as adposition counterparts of the applicative markers) appearing in the examples will be in SMALL CAPS.

The applicative marker used in the Wolof applicative construction (1b) is a suffix. There are also other types of applicative markers attested[2]. One of them is a prefix. An illustration is given below from Winnebago:

(2) Winnebago (Siouan, Midwestern United States)
a. *kook-EJA naanzhin-je-enan*
box-LOC stand-AUX-DECL
"It is standing in the box."
(Craig and Hale, 1988: 314, 328)

b. *kook-ra HO-nanzhin-je-enan*
box-DEF INESSIVE-stand-AUX-DECL
"It is standing in the box."
(Craig and Hale, 1988: 314, 328)

The third type is a circumfix. Nishimoto (2018: 88-90) suggests that Tandroy has an applicative circumfix with the allomorphs of: *añ- -a*, *a- -añe*, *i- -a* and *i- -añe*. The usage is illustrated in (3) below, in which *marare reo* "sick people" is an applied argument that has a beneficiary role:

(3) Tandroy (Austronesian, Southern Madagascar)
IpaiaÑE vare marare reo
look_for.APPL rice sick_person PL
"(Somebody) looks for rice for sick people."
(Nishimoto, 2018: 80; transl.: *D.N.*)

The aim of this study is twofold: (i) reveal that applicative marker types correlate with word order patterns by investigating the distribution of different applicative marker types and word order patterns across the world's languages, and (ii) provide diachronic explanations for the correlation.

The organization of the present paper is as follows: § 2 discusses the language sample; § 3 shows the result of classification for the

[2] Some applicative markers could be analyzed as clitics (as in Rama; Craig and Hale, 1988). However, the present study focuses on the prefix vs. suffix distinction rather than the affix vs. clitic distinction.

sample languages according to the types of applicative markers they have, together with word order patterns in each language; § 4 proposes a correlation deduced from what § 3 shows between applicative marker types and word order (adposition order and constituent order) patterns; § 5 provides some general theoretical foundation for the diachrony of verbal affixes in general; § 6 discusses how the processes whereby adpositions grammaticalize into applicative markers can contribute to explaining the correlation; § 7 discusses how the processes whereby verbs grammaticalize into applicative markers is also compatible with the correlation; § 8 summarizes the diachronic links discussed in §§ 6-7; § 9 briefly discusses how word order phenomena that are different from adposition order may correlate with applicative marker types; § 10 briefly discusses minor diachronic sources of applicative markers for future studies; § 11 provides a conclusion.

2. *Language sample*

I have selected 50 languages with applicative constructions and gathered information about their applicative markers mainly from grammar descriptions to perform the present study. My sample languages are listed below, with information about their genetic affiliations and geographical areas (in a similar fashion to Dryer, 1992)[3], together with the major source literature. From a geographic perspective, it can be seen that the sample languages do not show a perfectly equal distribution. Many of the languages are concentrated in the following six specific areas: Sub-Saharan Africa, Island Southeast Asia, Papua New Guinea, Australia, the Americas and the Caucasus, which is somewhat also the case for Peterson's (2007) and Polinsky's (2013) samples of languages with applicatives. From a genealogical perspective, Austronesian languages, Atlantic-Congo languages and Nilotic

[3] Although Dryer (1992) integrates North America and Central America into one, I distinguish them. Although genetic affiliations and geographical areas of the sample languages are not relevant to the main argument of the present paper, I introduce them here to show that the sample is not unduly biased in terms of these parameters.

languages occupy a good proportion of the sample. In that way, applicatives themselves are not distributed evenly in the world, but how frequently applicatives are found highly depends on the area and the language family (also, Dixon, 2012: 294 estimates that only «no more than about a quarter of the world's languages» have applicatives). In other words, the concentrated distribution of my sample languages in these particular areas and language families could be seen to some extent as «a scaled-down version» (Song, 2018: 94) of the whole picture of the distribution of applicatives in the world's languages. Note also that the three language families mentioned above are among the biggest ones in the world, contributing to their internal diversity and that languages belonging to different language families in the Americas share some areal features[4].

[4] Some of the languages in my sample are not considered to have applicatives by Peterson (2007) and Polinsky (2013). These languages will be discussed briefly in what follows. Peterson (2007) states that Yukaghir does not have applicatives. As I do not know what reasoning there was for this statement (despite his referring to Maslova, 1999), I included Kolyma Yukaghir in my sample because it has three applicative suffixes, two discussed by Maslova (1999) and Nagasaki (2003) and the other by Maslova (1993: 273). Also, Peterson (2007) mentions that applicative constructions in the incipient stage of grammaticalization, such as those found in Koyra Chiini (Heath, 1999), may not be considered prototypical applicatives due to their low productivity. However, I included Koyra Chiini in my sample because what matters is whether or not the element primarily has an applicative function – productivity is not a great issue unless lexicalizations cases are very conspicuous. Polinsky (2013) classifies, for some reason, Rama as a language without applicatives. However, it is quite safe to consider the Rama prefixes (preverbs such as *ba-* and *yu-*, for example) in question as applicatives, as Peterson (2007) does, even if Craig and Hale (1988) and Craig (1990) do not use the term *applicative* itself for these particular elements. Similarly, Polinsky (2013) classifies Yupik (Central) as a language without applicatives, based on Jacobson (1995). However, a comprehensive grammar of Central Alaskan Yupik released in a relatively recent year, Miyaoka (2012), discusses some elements that may be considered applicative affixes found in the language. Therefore, I included Central Alaskan Yupik in my database. Also, Peterson (2007) and Polinsky (2013) state that Chechen does not have applicatives. I see the non-core argument-adding verbal prefixes in Chechen-Ingush discussed by Nichols (1984; 2011) as applicatives, however, and included the language in my sample. Additionally, preverbs in Indo-European languages are sometimes discussed in terms of their valency-increasing or applicative-like functions, as in Vedic (Kulikov, 2012), Latin (e.g. Lehmann, 1983) and German (e.g. Rousseau, 1997: 106-107). However, they were not considered for sampling, because combinations of a preverb and a verb in Indo-European languages tend to show a high degree of lexicalization and because the major typological works on applicatives, including Peterson (2007), Polinsky (2013) and Zúñiga and Kittilä (2019), do not consider Indo-European preverbs at all.

NORTH AMERICA (8 languages): Hualapai (Cochimi-Yuman, Arizona; Ichihashi-Nakayama, 1996), Maricopa (Cochimi-Yuman, Arizona; Gordon, 1986), Winnebago (Siouan, Midwestern United States; Craig and Hale, 1988), Dakota (Siouan, North Dakota/South Dakota; Riggs, 2016 [1852]; Adam, 2019 [1878]), Southern Sierra Miwok (Miwok-Costanoan, California; Freeland, 1951; Broadbent, 1964), Creek (Muskogean, Oklahoma; Martin, 2011), Nez Perce (Sahaptian, Idaho; Rude, 1991), Central Alaskan Yupik (Eskimo-Aleut, Alaska; Miyaoka, 2012)

CENTRAL AMERICA (5 languages): Rama (Chibchan, Nicaragua; Craig and Hale, 1988; Craig, 1990), K'iche' (Mayan, Guatemala; Campbell, 2000), Yucatec Maya (Mayan, Belize/Mexico; Lehmann and Verhoeven, 2006; Lehmann, 2015a), Nahuatl (Uto-Aztecan, Mexico; Andrews, 1975), Southeastern Tepehuan (Uto-Aztecan, Mexico; Willet, 1981)

SOUTH AMERICA (7 languages): Kogi (Chibchan, Colombia; Knuchel, 2020), Kashibo-Kakataibo (Panoan, Peru; Zariquiey Biondi, 2018), Shipibo-Konibo (Panoan, Peru/Brazil; Valenzuela, 2010), Huallaga Quechua (Quechuan, Peru; Weber, 1989), Tariana (Arawakan, Amazonia; Aikhenvald, 2000), Katukina-Kanamari (Harákmbut-Katukinan, Amazonia; Queixalós, 2010; 2014), Mosetén (Mosetén-Chimané, Bolivia; Sakel, 2004)

AFRICA (11 languages): Tandroy (Austronesian, Southern Madagascar; Nishimoto, 2018), Amharic (Afro-Asiatic, Ethiopia; Amberber, 1997; 2000), Koyra Chiini (Songhay, Mali; Heath, 1999), Kipsigis (Nilotic, Kenya; Bii and Lonyangapuo, 2014), Maasai (Nilotic, Kenya/Tanzanya; Lamoureaux, 2004), Dholuo (Nilotic, Kenya/Tanzanya; Okoth-Okombo, 1997; Odero *et al.*, 2017), Wolof (Atlantic-Congo, Gambia/Senegar; Dione, 2013), Mbuun (Atlantic-Congo, Democratic Republic of the Congo [DRC]; Bostoen and Mundeke, 2011), Rwanda (Atlantic-Congo, Rwanda/DRC; Kimenyi, 1980), Swahili (Atlantic-Congo, East Africa; Liu, 2014), Herero (Atlantic-Congo, Namibia/Botswana; Yoneda, 2009)

SOUTHEAST ASIA (6 languages): Rawang (Sino-Tibetan, Myanmar; LaPolla, 2000), Bantik (Austronesian, Indonesia; Utsumi, 2012), Kambera (Austronesian, Indonesia; Klamer, 1998), Taba (Austronesian, Indonesia; Bowden, 1997), Tukang Besi (Austronesian, Indonesia; Donohue, 1999b; 2001), Javanese (Austronesian, Indonesia; Hemmings, 2013)

AUSTRALIA-NEW GUINEA (7 languages): Warembori (Lower Mamberamo, Indonesia; Donohue, 1999a), Barupu (Skou, Papua New Guines; Donohue, 2003), Motuna (Bougainville, Papua New Guinea; Onishi, 2000), Kope (Kiwaian, Papua New Guinea; Clifton, 1995), Ngan'gityemerri (Southern Daly, Australia; Reid, 1990), Warrungu (Pama-Nyungan, Australia; Tsunoda, 1998), Kalkatungu (Pama-Nyungan, Australia; Blake, 1979)

EURASIA (6 languages): Ainu (isolate, Japan; Kindaichi, 1993), Kolyma Yukaghir (Yukaghir, East Siberia; Maslova, 1993; 1999; Nagasaki, 2003), rGyalrong (Sino-Tibetan, Sichuan; Nagano, 2018), Thulung Rai (Sino-Tibetan, Nepal/India; Lahaussois, 2002), Chechen-Ingush (Nakh-Daghestanian, North Caucasus; Nichols, 1984; 2011), Georgian (Kartvelian, Georgia; Creissels, 2006; Kojima, 2012)

3. *Classification*

The sample languages are classified into the four patterns: languages with applicative prefix(es) only (Tables 1 and 2), languages with applicative suffix(es) only (Tables 3 and 4), languages with applicative prefix(es) and suffix(es) (Table 5), and languages with applicative circumfixes. These are shown in turn in the following tables, together with information about applicative marker counts and word order patterns in that language[5]. The word order patterns at issue here include constituent order patterns with regard to V and O (OV order vs. VO order) and adposition order patterns (postpositions vs. prepositions). As demonstrated, in my language sample, OV order overwhelmingly co-occurs with postpositions and VO order with prepositions – a manifestation of well-known implicational universals suggested by Greenberg (1963: 45) and Dryer (1992: 83; 2013; 2019: 65-66) virtually stating that OV order harmonizes with postpositions and VO order with prepositions. The present study will add onto them a correlation between applicative marker types and word order patterns as a new correlation concerning word order patterns.

[5] The data sources are as indicated in § 2.

Language	Applicative prefix number	Basic word order
Winnebago	4	SOV, postpositions
Dakota	5	SOV, postpositions
Creek	2	SOV, postpositions
Rama	5	SOV, postpositions
Kogi	3	SOV, postpositions
Katukina-Kanamari	4	VSO/SVO, postpositions
Bantik	1	SVO/VOS, prepositions
Kope	1	SOV, postpositions
rGyalrong	1	SOV, postpositions
Ainu	3	SOV, postpositions
Georgian	3	SOV, postpositions
Chechen-Ingush	4	SOV, postpositions
Total: 12/50	Total: 36	

Table 1. *Languages with applicative prefix(es) only.*

Applicative prefix number	1	2	3	4	5	>5	Average
Language number	3/12	1/12	3/12	3/12	2/12	0/12	3.0

Table 2. *Distribution of applicative prefix counts.*

Language	Applicative suffix number	Basic word order
Nez Perce	5	free, postpositions
Southern Sierra Miwok	4	SVO, prepositions
Central Alaskan Yupik	5	SOV, postpositions
Hualapai	1	SOV, postpositions
Southeastern Tepehuan	1	SVO, postpositions
Nahuatl	1	VSO/VOS, relational nouns (postpositions)

Table 3. *Languages with applicative suffix(es) only (continues).*

Language	Applicative suffix number	Basic word order
K'iche'	1	VOS, prepositions
Yucatec Maya	1	VSO/VOS, prepositions
Tariana	1	free, postpositions
Huallaga Quechua	5	free/SOV, postpositions
Kashibo-Kakataibo	3	SOV, postpositions
Shipibo-Konibo	3	SOV, postpositions
Rwanda	5	SVO, prepositions
Herero	1	SVO, prepositions
Swahili	2	SVO, prepositions
Mbuun	1	SVO, prepositions
Wolof	2	SVO, prepositions
Koyra Chiini	1	SVO, prepositions
Kipsigis	4	VSO/VOS, prepositions
Maasai	3	VSO, prepositions
Dholuo	2	SVO, prepositions
Amharic	2	SOV, postpositions
Rawang	1	SOV(verb-final), postpositions
Barupu	8	SOV, prepositions
Warembori	5	free?, prepositions
Tukang Besi	3	VOS, prepositions
Motuna	1	verb-final, postpositions
Taba	2	SVO, prepositions
Javanese	2	SVO, prepositions
Kambera	1	free, prepositions
Ngan'gityemerri	1	SVO, postpositions
Warrongo	2	free, postpositions
Kalkatungu	1	SOV, postpositions
Thulung Rai	1	SOV, postpositions
Kolyma Yukaghir	3	SOV, postpositions
Total: 35/50	Total: 85	

Table 3. *Languages with applicative suffix(es) only.*

Applicative suffix number	1	2	3	4	5	>5	Average
Language number	15/35	7/35	5/35	2/35	5/35	1/35	about 2.43

Table 4. *Distribution of applicative suffix counts.*

	Applicative prefix number	Applicative suffix number	Basic word order
Maricopa	3	1	SOV, postposition
Mosetén	2	4	SVO, postposition
Total: 2/50	Total: 5	Total: 5	

Table 5. *Languages with both applicative prefix(es) and suffix(es).*

Table 2 and Table 4 can be modified as follows (Tables 6 and 7 respectively), adding in consideration Mosetén and Maricopa:

Applicative prefix number	1	2	3	4	5	>5	Average
Language number	3/14	2/14	4/14	3/14	2/14	0/14	about 2.93

Table 6. *Distribution of applicative prefix numbers revisited.*

Applicative suffix number	1	2	3	4	5	>5	Average
Language number	16/37	7/37	5/37	3/37	5/37	1/37	about 2.43

Table 7. *Distribution of applicative suffix numbers revisited.*

The only language in my sample not falling into any of the above groups is Tandroy (1/50), which only has an applicative circumfix with four allomorphs (*añ- -a*, *a- -añe*, *i- -a* and *i- -añe*), as already mentioned in § 1.

4. *A correlation between applicative marker types and word order patterns*

The following facts can be observed from the data exhibited in § 3. Of the 14 languages with applicative prefixes, 13 languages (about 92.9%) have predominant OV order or postpositions. There are only 2 languages with predominant VO order or prepositions (Bantik and Mosetén), one of which also has applicative suffixes (Mosetén). In contrast, of the 37 languages with applicative suffixes, 20 languages (about 54.1%) have predominant OV order or postpositions and 19 languages (about 51.4%) have predominant VO order or prepositions. From these observations, the following generalization holds as a correlation between applicative marker types and word order patterns:

(a) *A correlation between applicative marker types and word order patterns*
Languages with applicative prefix(es) are more likely to have postpositions and predominant OV order than languages with applicative suffix(es) are.
More precisely, applicative prefixes generally co-occur with postpositions and predominant OV constituent order whereas applicative suffixes co-occur with both word order patterns to similar extents.

Additionally, there is another relevant observation, concerning the frequency difference between applicative prefixes and applicative suffixes:

(b) *The frequency of applicative prefixes and suffixes*
Applicative suffixes are more frequent than applicative prefixes.

How can the correlation between applicative marker types and word order patterns be explained? To explore this problem, it should be noted that it is not a concomitant effect of any general word order tendency that applies to all grammatical areas (a possibility suggested by an anonymous reviewer). Indeed, it is known that suffixes are more

prevalent than prefixes *on a general basis* (e.g. Bybee *et al.*, 1990) and this seems to be reflected in the classification of the sample languages in the present paper. However, the high frequency of VO order and preposition predominance among languages with applicative prefixes cannot be considered an inevitable outcome of a word order pattern distribution among the world's languages, for the following reasons. Firstly, the proportion of predominantly postpositional (or OV) languages to predominantly prepositional (or VO) languages is roughly equal (e.g. Greenberg, 1963). Secondly, as revealed by Bybee *et al.* (1990), suffixing preference on a general basis is observed across the world's languages without a particularly strong effect on VO languages. Then, what should be questioned is why languages with applicative prefixes exhibit almost uniform OV/postposition predominance, while languages with applicative suffixes are allowed both of OV/postposition predominance and VO/preposition predominance nearly equally, or why VO/preposition predominance is frequently found in conjunction with applicative suffixes but only rarely with applicative prefixes. Another point that supports the assertion that the correlation observed is not a result of a general relationship between adposition order patterns and affix types is suggested by the well-established historical relationship between adposition order patterns and affix types: there are numerous instances in which a case suffix's origin is attributed to a postposition or a case prefix's origin is attributed to a preposition, based on their semantic and phonological similarities (e.g. Heine and Kuteva, 2007: 76, 91-92; Lehmann, 2015b: 84-92). In such instances, there are positive correlations between prefixes and prepositions and between suffixes and postpositions, which contradicts the correlation proposed in the present study with regard to applicative affixes.

Given that situation, it is reasonable to suspect that the type of applicative marker plays a role in the frequent co-occurrence of applicative prefixes and postpositions (or OV) and that of applicative suffixes and prepositions (or VO). If this the case, it means that the types of applicative markers are dependently motivated by their (historical) relationship with adposition order or constituent order. It is possible that there would be independent motivation, in which case the high

frequency of applicative suffixes as mentioned in (b) would not be motivated dependently by any other phenomena but finds an explanation in itself (I owe this suggestion to an anonymous reviewer). However, does the presence of an independent motivation negate the validity of a dependent motivation (or vice versa)? As an example, let us consider suffixing preference on a general basis again. The high frequency of suffixes on a general basis has been given independent explanations, such as a processing explanation (Cutler *et al.*, 1985) or a psycholinguistic explanation (Hawkins and Cutler, 1988). However, Bybee *et al.* (1990) suggest that it also has dependent motivations, specifically that a preposed element is more resistant to morphologization than a postposed element with regard to a stem. The two types of explanations do not negate each other, in the sense that they complementarily explain the same phenomenon from different perspectives. Thus, just as Bybee *et al.* (1990) explain suffixing preference on a general basis with reference to the diachronic developments of the affixes despite the presence of independent motivations, so it is possible to give a diachronic explanation for the high frequency of applicative suffixes over applicative prefixes (this will be done in § 8), irrespective of whether an independent explanation would be possible for it (a possible explanation of such a kind I suppose is, as suggested above already, to see the high frequency of applicative suffixes as an inevitable effect of suffixing preference on a general basis). Such 'independent explanations', like a psycholinguistic explanation, can, I suppose, be considered as a kind of synchronic explanation. Another synchronic viewpoint that could be raised against the present study's claim is an attempt to explain the correlation in synchronic terms. However, the principle mentioned above, that a synchronic explanation (or an independent explanation) and a diachronic explanation can coexist for an identical phenomenon, holds true in this case as well.

Thus, it is appropriate to postulate a diachronic explanation for (a) and (b) based on the historical development of applicative markers. This will be addressed in §§ 6-7, following a discussion of the common theoretical foundation in § 5.

5. *A theoretical foundation for the diachrony of verbal affixes*

The problem of whether an applicative affix is a prefix or suffix is reduced to a problem of morpheme order. The major principle adopted in diachronic studies of the morpheme order problem is that the position of an affix with regard to the verbal root has a strong tendency to reflect the erstwhile position of its source independent word with regard to the verb. In historical approaches to languages, this idea emerged from the observation that affixes develop through syntagmaticization or morphologization of independent words as a result of the frequent placement of these independent words immediately before or after elements of a certain word class. Such ideas were developed and put into practice in a number of diachronic typology studies, including Givón (1971; 2015), Comrie (1980), Bybee (1988), Bybee *et al.* (1990), Siewierska (2010) and Mithun (2011; 2017). In §§ 6-7, it will be discussed how this principle is manifested in the way applicative markers develop from adpositions and verbs, the two most frequent sources of applicative markers (Peterson, 2007: 123-171; Zúñiga and Kittilä, 2019: 222-223). For the issues of less frequent sources, see § 10.

6. *Diachronic links between adpositions and applicative affixes*

Garrett (1990), Baker (1996: 431-432), Creissels (2006: 79), Peterson (2007: 125-129) and Zúñiga and Kittilä (2019: 222-223) discuss that adpositions can be diachronic sources of applicative markers. However, they do not discuss in detail in what mechanisms it is realized or how results are different between postposition source cases and preposition source cases. This will be attempted in the present section.

Consider the following Rama example. According to Craig and Hale (1988), the postposition *ka* as appearing in (4a) is the diachronic source of the applicative prefix *ka-* as appearing in (4b).

(4) Rama (Chibchan, Nicaragua)

a. *naing taata KA na-ngalbi-u*
my father PSP/from 1-run-TNS
"I ran away from my father."

(Craig, 1990: 127)

b. *KA-na-ngalbi-u*
RP/from-1-run-TNS
"I ran away from him."

(Craig, 1990: 127, 132)

Likewise, although it is not confirmed in the literature, in Warembori, the applicative suffix *-na* (5b) appears to originate from the preposition *nana* (5a)'s attaching to the preceding verb and reducing its own form.

(5) Warembori (Lower Mamberamo, Indonesia)

a. *e-na NANA e-me-ro*
1SG-eat OBL 1SG-house-IND
"I ate in my house."

(Donohue, 1999a: 17)

b. *e-na-NA e-me-ro*
1SG-eat-APPL 1SG-house-IND
"I ate in my house."

(Donohue, 1999a: 17)

Generalization of a similar kind of grammatical change is justified in the following way. Keeping in mind what was discussed in § 5, it should be noted that Dryer (1992: 92-93) discusses a strong correlation between VERB AND ADPOSITIONAL PHRASE order, whereby, in overwhelming cases, OV order co-occurs with PP-V order (see also Baker, 1996: 432) and VO order co-occurs with V-PP order. Also, as already mentioned in the beginning of § 3, in many cases, OV co-occurs with postpositions and VO with prepositions (Greenberg, 1963: 45; Dryer, 1992: 83; 2013; 2019: 65-66). Combining these universals leads to the assumption that, generally, postpositions have many chances to be

placed immediately before the verb and prepositions have many chances to be placed immediately after the verb. Considering finally the fact that the adposition is a closed class and its limited members are used in combination with a wide variety of verbs, it can be postulated that postpositions and prepositions are possible origins of applicative prefixes and applicative suffixes respectively. To sum up, the generalization (c) is gained:

(c) *Adpositional origins of applicative affixes*
The original identity of an applicative prefix is a word that used to frequently come immediately before the verb. Postpositions can fulfill this role in OV (and exceptional VO) languages.
The original identity of an applicative suffix is a word that used to frequently come immediately after the verb. Prepositions can fulfill this role in VO (and exceptional OV) languages.

It should be noted that there are some situations in which a postposition does not come immediately before the verb or a preposition does not come immediately before the verb. Possible situations in which this can happen will be discussed in what follows.

Firstly, if the language in question does not have a rigidly fixed word order, situations will be possible in which a postpositional phrase comes after the verb or a prepositional phrase comes before the verb. However, what is depicted in (c) will be realized to a sufficient degree in such cases as well, as long as the basic or most frequent order allows immediate adjacency of a postposition and the verb or a preposition and the verb and there are many more cases in which a postposition follows the verb or a preposition precedes the verb than the other way around.

Secondly, an adposition heading an adpositional phrase modifying a verb and the verb are not always immediately adjacent even if the word order allows postpositional phrase to follow the verb or prepositional phrase to precede the verb, in that some intervening elements like adverbs, other grammatical arguments or any inflectional morphemes may be present between them. For example, in (6) below, the

NP *šiekar* "sugar" intervenes the preceding postposition *ču* "in" and the verb *tasan* "sprinkle" in the final position:

(6) Chechen-Ingush (Nakh-Daghestanian, North Caucasus)
čaj-na ČU šiekar tasan
tea-DAT in sugar sprinkle
"Put sugar in tea."
(Nichols, 1984: 193)

In a similar vein, in (7) below, the NP *te bambai* "a comb" is placed between the predicative complex *no-balu* in the initial position and the prepositional phrase headed by the benefactive preposition *ako*.

(7) Tukang Besi (Austronesian, Indonesia)
no-balu te bambai AKO te porai-no
3REAL.S-buy CORE comb BEN CORE fiancée-3GEN
"He bought a comb for his fiancée."
(Donohue, 2001: 221)

Nevertheless, it is confirmed that these postposition and preposition have developed an applicative suffix and applicative prefix respectively, as in (8) and (9):

(8) Chechen-Ingush (Nakh-Daghestanian, North Caucasus)
šiekar čaj-na ČU-tasan
sugar-NOM tea-DAT in-sprinkle
"Put sugar in tea."
(Nichols, 1984: 193)

(9) Tukang Besi (Austronesian, Indonesia)
no-balu-AKO te porai-no te bambai
3REAL.S-buy-APPL CORE fiancée-3GEN CORE comb
"He bought a comb for his fiancée."
(Donohue, 2001: 221)

Why the grammaticalization happens despite such intervention could be explained as follows. If a speaker of a predominantly postpositional language conceives that a postposition heading a

postpositional phrase modifying a verb only has to come before the verb, using the postposition as if it is a prefix to the verb satisfies that demand. In that process, it does not matter if there happens to be any constituent between the postposition and the verb; if the speaker wants to morphologize the postposition to the verb despite the presence of such an intervening constituent, it suffices to place the constituent outside of the resulting prefixed verb. The same will apply to cases of predominantly prepositional languages. Another possibility is, as speculative, that, in an earlier period, the word order rule did not allow it to place a core NP between an adposition and the verb when the applicative marker arose by the adposition's attaching to its adjacent verbs.

Diachronic phenomena that consist with this theoretical background are observable in some more of my sample languages, including both cases in which applicative prefixes likely developed from postpositions and in which applicative suffixes likely developed from prepositions. In §§ 6.1-6.2 below, these will be discussed in turn, as support to the generalization (c). Not every applicative marker has a clear diachronic origin: in some cases, the relationship between the adposition and the applicative affix is not completely evidenced by the source literature but based on my speculations built upon their phonological and semantic similarities. However, as will be seen, there is an abundance of such probable cases, whereas no case is found in which an applicative prefix seems to originate from a preposition or an applicative suffix seems to originate from a postposition. In any case, there will be enough evidence left to justify the general diachronic process of postpositions developing into applicative prefixes and prepositions developing into applicative suffixes.

6.1. *Applicative prefixes from postpositions*

Applicative prefixes originating in postpositions seem to exist in at least 7 languages in my language sample, 4 out of which are from the Americas. These will be illustrated below, in turn.

Riggs (2016 [1852]: 17, 39) and Adam (2019 [1878]: 20, 24) mention that the Dakota applicative prefixes *ki-* (~ *kic'i-*), *a-*, *e-* and

o- probably come from the postpositions *kic'i*, *akan*, *ekta* and *ohna* respectively[6]. Below is illustrated use of the applicative prefix *ki-* (~ *kic'i-*) (10b, 10c) and the postposition *kic'i* (10a):

(10) Dakota (Siouan, North Dakota/South Dakota)

a. *he* *KIC'I* *mde* *kta*
him with I.go FUT
"I will go with him."

(Riggs, 2016 [1852]: 60)

b. *wowapi* *KIC'I-caga*
writing for-him.he.made
"He wrote a letter for him."

(Riggs, 2016 [1852]: 17)

c. *wowapi* *KI-caga*
writing to-him.he.made
"He wrote him a letter."

(Riggs, 2016 [1852]: 17)

I suppose that, in Winnebago, the adverb/postposition *e'gi* "here, in" mentioned in Lipkind (1945: 52), an example cited in (11a) below, might be the origin of the applicative prefix *gi-*, illustrated in (11b). The other Winnebago applicative markers, the prefixes *o-*, *a-* and *i-*, have unknown origins.

(11) Winnebago (Siouan, Midwestern United States)

a. *hāhếGI*
hāhế-E'GI
night-here
"At night."

(Lipkind, 1945: 52)

[6] I am not able to judge how plausible these scenarios actually are, with the phonological differences, but I consider at least the relationship between the postposition *kic'i* and the homophonous applicative *kic'i-* quite valid. Also, the remaining applicative marker, the prefix *ic-*, originates from the adverb *ici* "together" (Riggs, 2016 [1852]: 79; Adam, 2019 [1878]: 24); it is unknown to me whether it has an adpositional usage.

b. *chaa-izhan* *hin-GI-guch-shannan*
deer-INDEF 1OBJ-DAT-shoot-DECL
"He shot a deer for me."

(Craig and Hale, 1988: 331)

According to Gordon (1986: 50), in Maricopa, the case suffixes *-ly*, *-k* and *-m* were the sources from which the semantically and phonologically similar applicative prefixes *ily-*, *k-* and *nym-* emerged, respectively. Note that *-ly*, *-k* and *-m* are described by Gordon as case suffixes rather than postpositions. From this, it is indicated that, for example, there was a common free word source for *-ly* and *ily-*, which could have been a postposition, a relational noun or a serial verb. The same applies to the other two case-applicative pairs. Anyhow, this also matches the generalization depicted in (c). The following are illustrations of *ily-* and *-k* along with their case marker counterparts:

(12) Maricopa (Cochimi-Yuman, Arizona)
a. *kwnho* *lames-LY* *'-shvaw-k*
basket table-in 1-put-REAL
"I put the basket on the table."

(Gordon, 1986: 49)

b. *mat* *tdish* *ILY-k-shvaw-k*
earth corn in-IMP-put-REAL
"Plant the corn in the ground."

(Gordon, 1986: 50)

c. *Lynn-sh* *Yuma-K* *dii-k*
Lynn-SBJ Yuma-LOC come-REAL
"Lynn came from Yuma."

(Gordon, 1986: 46)

d. *Heather-sh* *va-ny-a* *K-dii-k*
Heather-SBJ house-DEM-AUGV LOC-come-REAL
"Heather came from the house."

(Gordon, 1986: 50)

Craig and Hale (1988) and Craig (1990: 125-126) discuss that all of the Rama applicative prefixes, *ba-*, *yu-*, *ka-*, *su-* and *yaa-*, come from postpositions, which are *ba*(*ng*), *u*, *ka*(*ng*), *su* and *aa*(*k*) respectively. Below are illustrations of *u*, *yu-*[7], *su* and *su-*. It seems that a postpositional phrase may either come after the verb or before the verb, as far as I examine Craig and Hale (1988). Note that some degree of lexicalization may be observed in (13b), in that the combination of the verb "come" and the comitative applicative prefix yields the verb "bring".

(13) Rama (Chibchan, Nicaragua)

a. *naing taata u n-aakur-u taim ki*
my father PSP/with I-be-ASP time in
"I lived with my father at the time."
(Craig and Hale, 1988: 322)

b. *nainguku naing taata ngabang*
thus my father silkgrass
yu-i-siik-i nguu ki
with-he-come-ASP house in
"That's why my father brings the silkgrass in the house."
(Craig and Hale, 1988: 313)

c. *nang-su aa an-kaa-i*
bed-PSP/on NEG they-put-TNS
"They don't put it on the bed."
(Craig, 1990: 129)

d. *tauli aa su-an-kaa-i*
salt NEG RP/on-they-put-TNS
"They don't put salt on it."
(Craig, 1990: 129)

Of the three Katukina-Kanamari applicative prefixes, *katu-* and *ama-*, come from the postpositions *katu* and *ama* respectively

[7] Craig (1990: 131) mentions that *y-* in *yu-* can be analyzed as a fossilized third person marker or «an epenthetic glide».

(Queixalós, 2010: 41-43; 2014: 303)[8]. Francesc Queixalós (personal communication, 2021) also provides examples of the applicative prefix *to-* and the postposition *-ton*[9]. Although, in each of (14a), (14c) and (14e), the postpositional phrase is placed in the sentence-final position and the postposition is far from the verb, it seems safe to assume that the applicative prefixes in (14b), (14d) and (14f) originate in the respective postpositions, given their phonological and semantic similarities and constituent order flexibility in the language.

(14) Katukina-Kanamari (Harákmbut-Katukinan, Amazonia)

a. *hoki adu no-KATU*
talk 1SG 2SG-SOC.INST
"I am talking to you."
(Queixalós, 2014: 302)

b. *i-KATU-hoki i:dik*
1SG-APPL-talk-2SG 2SG
"I am talking to you."
(Queixalós, 2014: 302)

c. *Dyomi na=donman-na Mayon na=AMA*
Doyomi CASE=go.fishing-DIR Mayon CASE=REC
"Dyomi went fishing for Mayon."
(Queixalós, 2014: 42)

d. *Dyomi na=AMA-donman-na Mayon*
Dyomi CASE=APPL-go.fishing-DIR Mayon
"Dyomi went fishing for Mayon."
(Queixalós, 2014: 42)

e. *hoki i:dik yo-TON*
talk you me-to
"You talked to me."
(Queixalós, p.c., 2021)

[8] I owe this information to Francesc Queixalós.

[9] According to Queixalós (2010: 43), the remaining applicative marker, the prefix *o-*, does not have a postposition cognate and could date back to the pronoun *o* "other".

f. *yo-TO-hoki* *i:dik*
me-APPL-talk you
"I talked to you."

(Queixalós, p.c., 2021)

All of the Chechen-Ingush applicative prefixes – *chy-* (~ *ču-*), *t'a-* (*t'y-*), *k'al-* and *dehwa-* – evidently have their origins in their homophonous postpositions as Nichols (1984: 193; 2011: 411-414) discusses. Below are illustrations of *ču-* and *k'al-* (15b, d) and their postposition counterparts (15a, c):

(15) Chechen-Ingush (Nakh-Daghestanian, North Caucasus)

a. *čaj-na* *ČU* *šiekar* *tasan*
tea-DAT in sugar sprinkle
"Put sugar in tea."

(Nichols, 2011: 193)

b. *šiekar* *čaj-na* *ČU-tasan*
sugar-NOM tea-DAT in-sprinkle
"Put sugar in tea."

(Nichols, 2011: 193)

c. *cyskj* *istuolaa* *K'AL* *iiqqar*
cat table.DAT under run.WP
"The cat ran under the table."

(Nichols, 2011: 411)

d. *cyskj* *istuolaa* *K'AL-iiqqar*
cat table.DAT under-run.WP
"The cat ran under the table."

(Nichols, 2011: 411)

Although the diachronic origin of the Ainu multiple-meaning applicative prefix *e-*, as appearing in (16b), is not established, a possible scenario I suppose is that it originally had a postposition-like behavior as in (16a) or was a postposition proper. The same is applied to the Ainu other multiple-meaning applicative prefix, *ko-* (compare (16c) and (16d))[10].

[10] The ultimate origin of *ko-* could be the verb *kor* "have" (KINDAICHI, 1993: 273).

(16) Ainu (isolate, Japan)

a. *kamuiranke-tam shirka tanne teshpa*
godgiven-sword bent long squid
kane kutbok-e-chiu
and belt_below-at-arrange
"The sword of the god gift is bent sharply into the spear squid and inserted under the obi, and [...]"
(Kannari and Kindaichi, 1959: 153-154; glosses and transl.: *D.N.*)

b. *tanekuran nei tonoto a-e-kamuinomi*
tonight that alcohol 1PL-APPL-pray
kor shiran ruwa-tap-an
PROG EVD DECL-EMP-COP
"We are going to pray with that alcohol tonight."
(Kannari and Kindaichi, 1964: 139; glosses and transl.: *D.N.*)

c. *tush-ko-kira*
rope-with-escape
"(He) ran away tied with the rope."
(Kindaichi, 1993: 273; glosses and transl.: *D.N.*)

d. *niwen hokokse ko-horipi*
fierce cry APPL-dance
"He dances with powerful voice."
(Kannari and Kindaichi, 1963: 136; glosses and transl.: *D.N.*)

6.2. *Applicative suffixes from prepositions*

Mirror phenomena of what we saw above, that is, applicative suffixes developing from prepositions, likely happened in at least 8 languages in my language sample, including 2 Indonesian languages and 5 African languages.

The first case is Warembori. Although their historical relationship is not mentioned in Donohue (1999a), the prepositions *nana*, *ta* and *tana* in (17a), (17c) and (17e) may be assumed to be the origins of the applicative suffixes *-na*, *-ta* and *-tane* in (17b), (17d) and (17f) respectively:

(17) Warembori (Lower Mamberamo, Indonesia)

a. *e-na* *NANA* *e-me-ro*
1SG-eat OBL 1SG-house-IND
"I ate in my house."
(Donohue, 1999a: 17)

b. *e-na-NA* *e-me-ro*
1SG-eat-APPL 1SG-house-IND
"I ate in my house."
(Donohue, 1999a: 17)

c. *ka-ra-pasi* *TA* *bunupune*
1PL.INCL-go-all ALL village
"We all went to the village." not *"We went to all the villages."
(Donohue, 1999a: 170)

d. *ka-ra-pasi-TA* *bunupune*
1PL.INCL-go-all-APPL village
"We went to all the villages." not *"We all went to the village."
(Donohue, 1999a: 170)

e. *e-mamieke* *da* *TANA* *Patena*
1SG-daughter go ALL Mantarbori
"My daughter's gone to Mantarbori."
(Donohue, 1999a: 14)

f. *e-ra-mo-TANE* *Teba*
1SG-go-hither-APPL Teba
"I came from Teba."
(Donohue, 1999a: 26)

As for Tukang Besi, Donohue (1999b: 242, 333; 2001) suggests that the preposition *ako* as appearing in (18a) is the source from which the homophonous applicative suffix *-ako* as appearing in (18b) emerged. Also, it seems to me that the conjunction-preposition *kene* as in (18c) and the applicative suffix *-ngkene* as in (18d) could be related in some way.

(18) Tukang Besi (Austronesian, Indonesia)

a. *no-balu te bambai AKO te porai-no*
3REAL.S-buy CORE comb BEN CORE fiancée-3GEN
"He bought a comb for his fiancée."
(Donohue, 2001: 221)

b. *no-balu-AKO te porai-no te bambai*
3REAL.S-buy-APPL CORE fiancée-3GEN CORE comb
"He bought a comb for his fiancée."
(Donohue, 2001: 221)

c. *no-wila kua koranga-no KENE porai-no*
3R.S/A-go ALL garden-3GEN and fiancée-3GEN
"He went to his garden with his fiancée."
(Donohue, 2001: 221)

d. *no-wila-NGKENE te porai-no kua koranga-no*
3R.S/A-go-APPL CORE fiancée-3GEN ALL garden-3GEN
"He went to his garden with his fiancée."
(Donohue, 2001: 221)

According to Heath (1999: 137), in Koyra Chiini, the instrumental-comitative preposition *nda* that appears in (19a) historically got to be suffixed to verbs like in (19b) as a result of «redrawing of word boundaries» (with some lexicalization effect):

(19) Koyra Chiini (Songhay, Mali)

a. *a-a ton NDA allaa feeji korey*
3SG.S-IPFV be.full with just sheep white
"It was full of nothing but white sheep."
(Heath, 1999: 157)

b. *ay kaa-NDA mana attee*
1SG.S come-with 2SG.DAT tea
"I have brought some tea for you(SG)."
(Heath, 1999: 157)

Next, Amberber (2000: 321-322) and Creissels (2006: 79) note the similarities of the Amharic applicative suffixes *-ll* and *-(ɨ)bb* to the prepositions *lə-* and *bə-* respectively (see also Amberber, 1997: 3-4), and Hudson (2018: 615) mentions that «two prepositions *-bb-* 'at, on' and *-ll-* 'to, for' are suffixes to verb stems». An illustration of the preposition *bə-* (20a) and the applicative *-ɨbb* (20b) is shown below. It can be seen that the position of the prepositional phrase with regard to the verb is at odds with the supposed historical process, as in Katukina-Kanamari in (14): word order change might have happened after the applicative suffixes developed, so that the prepositional phrase postposed to the verb is a remnant of the time when prepositional phrases were placed after the verb rather than before the verb[11]. Another possibility is that, for example, the sequence *-ɨbb-ət* in (20b) is a prepositional phrase that is placed at the end of the predicate and *-et* has a resumptive pronoun function with regard to the preceding topic free NP (*lɨǰ-u-n* "the boy")[12]. If the former possibility is the case, the Amharic case will serve as an instantiation of development of applicative suffixes out of prepositions due to the frequent adjacency (in some point in the history) of the prepositions and the verbs. In contrast, if the latter possibility is the case, the suffixal status of the applicative affix will not be relevant to word order; however, as I suppose, it could be the prepositional status of the adposition that makes it easier for the adpositional phrase to come after the verb to fulfill a resumptive function, since, as mentioned in § 6 with reference to Dryer (1992: 92-93), prepositional phrases generally more harmonize with postverbal positions than postpositional phrases do.

(20) Amharic (Afro-Asiatic, Ethiopia)
a. *astemari-wa* *bə-lɨǰ-u* *sak'ə-čč*
teacher-DEF+F at-boy-DEF laugh+PERF-3F
"The teacher laughed at the boy."
(Amberber, 2000: 323)

[11] It is known that Amharic underwent VO-to-OV and ModN-to-NMod word order changes (I owe this information to an anonymous reviewer; see Bach, 1970 and Givón, 1971), suggesting that the change supposed here is plausible as well.

[12] I am grateful to an anonymous reviewer who pointed this out.

b. *astemari-wa* *liǰ-u-N* *sak'ə-čč-ɨBB-ət*
teacher-DEF+F boy-DEF-ACC laugh+PERF-3F-APPL-3M.O
"The teacher laughed at the boy."
(Amberber, 2000: 323)

The fifth instance comes from Yucatec Maya. According to Lehmann and Verhoeven (2006) and Lehmann (2015a), some theme applicative constructions by its only applicative suffix *-t* (21b) may be paraphrased using the locative preposition *ti'* (21a). This suggests that the preposition *ti'* could be the source of the applicative suffix *-t*.

(21) Yucatec Maya (Mayan, Belize/Mexico)
a. *táan* *u* *ts'íikil* *TI'* *u* *na'*
PROG SBJ.3SG feel_angry LOC POSS.3SG mother
"He is annoyed with / is scolding his mother."
(Lehmann and Verhoeven, 2006: 471)

b. *táan* *u* *ts'íikil-T-ik* *u* *na'*
PROG SBJ.3SG feel_angry-TRR-INCMPL POSS.3SG mother
"He is annoyed with / is scolding his mother."
(Lehmann and Verhoeven, 2006: 471)

According to Kimenyi (1980), the Rwanda locative applicative marker has the allomorphs *-ho*, *-mo* and *-yo*. Of these, at least *-mo* (22e) and *-ho* (22b) appear to me to come from the adpositions *mo* (22d) – or *mú* (22c) – and *ho* (22a) respectively[13]. Although *-ho* seems to only have a postposition cognate, it is likely that it originally had a preposition cognate, from which it emerged. In fact, *-mo* seems to have both postposition and preposition cognates. Compare (22c) and (22d).

(22) Rwanda (Atlantic-Congo, Rwanda/DRC)
a. *umugóre* *y-oohere-je* *isóko* *HO* *umubooyi*
woman she-send-ASP market to cook
"The woman sent the cook to the market."
(Kimenyi, 1980: 89)

[13] KIMENYI (1980: 89) mentions that those adpositions are «underlying prepositions» of the respective applicative markers.

b. *umugóre y-oohere-jé-HO isóko umubooyi*
woman she-send-ASP-to market cook
"The woman sent the cook to the market."
(Kimenyi, 1980: 89)

c. *úmwáana y-a-taa-ye igitabo MÚ máazi*
child he-PST-throw-ASP book in water
"The child has thrown the book into the water."
(Kimenyi, 1980: 89)

d. *úmwáana y-a-taa-ye ámáazi MO igitabo*
child he-PST-throw-ASP water in book
"The child has thrown the book into the water."
(Kimenyi, 1980: 89)

e. *úmwáana y-a-taa-yé-MO ámáazi igitabo*
child he-PST-throw-ASP-in water book
"The child has thrown the book into the water."
(Kimenyi, 1980: 89)

According to Stafford (1967: 16), Okoth-Okombo (1997: 50-56) and Odhiambo and Malherbe (2009: 22-24), Dholuo has the prepositions *ni* (~ *ne*) "for" (23b) and *e* "in" (23d). Okoth-Okombo even shows a locational-copula-like usage of *ni* (~ *ne*) (23a), which I consider may be older than its prepositional usage. It at least seems true that, in (23e), *ni* is a copula and *e* is a preposition, as the cited author's own gloss indicates. I postulate that these are diachronic sources of the applicative suffixes *-n* expressing "on behalf of", "towards" and "with regard to" (Odero *et al.*, 2017) as illustrated in (23c) and *-e* expressing "a place where an action takes place" (Odero *et al.*, 2017) as illustrated in (23f) respectively:

(23) Dholuo (Nilotic, Kenya/Tanzanya)
a. *nyathina NI Nairobi*
child.mine be.PRES (in) Nairobi
"My child is in Nairobi."
(Okoth-Okombo, 1997: 24)

b. *ng'ato* *ong'iewo* *NE* *nyathi* *pala*
someone buy.PF BEN child knife
"Someone has bought a knife for the child."
(Okoth-Okombo, 1997: 54)

c. *gi-ndik-o-NE-gi_ maber*
3PLS-write-IND-APPL-3PLO_ well
"They are writing well for them."
(Odero *et al.*, 2017: 10)

d. *E* *tie* *mesa*
in foot table
"at the foot of the table"
(Odhiambo and Malherbe, 2009: 23)

e. *rombe* *NI* *E* *pap*
sheep.PL COP LOC field
"The sheeps are in the field."
(Okoth-Okombo, 1997: 50)

f. *i-lem-o-E_ mos*
2SG.S-pray-IND-LOC_ silently
"You are praying silently in a place."
(Odero *et al.*, 2017: 11)

The last example is Kipsigis. It has four applicative markers, including *-en*, illustrated in (24b), which is built on (24a). Kipsigis's related dialect Nandi has the applicative suffix *-e:*, illustrated in (25b), which, based on Creider (2002: 176-179)[14], seems to overall cover multiple meanings of the Kipsigis suffix *-en* and originates from the multiple-purpose preposition *e:ng* (~ *e:n*), which is illustrated in (25a). Also, Kipsigis has prepositions that can paraphrase applicative constructions (Maria Kouneli, personal communication, 2021), including the generic preposition *ɛ:n* "at, to, for" (Driemel and Kouneli, 2021: 13), phonologically and semantically similar to the Kipsigis applicative *-en*. Therefore, it seems safe to assume that the diachronic source of *-en* is a preposition.

[14] I owe the information of Creider (2002) to Maria Kouneli.

(24) Kipsigis (Kalenjin, Nilotic, Kenya)
a. *ki-a-um*
PST-1SG/NOM-shade(take shelter)
"I shaded/took shelter."
(Bii *et al.*, 2014: 306)

b. *ki-a-um-EN* *got*
PST-1SG-shade-INST house.DAT
"I shaded (took shelter) in the house."
(Bii *et al.*, 2014: 306)

(25) Nandi (Kalenjin, Nilotic, Kenya)
a. *mì:* *inkwe:k* *ce:pú:nkû:t* *E:N* *tábû:t*
be vegetables.NOM pot in attic
"The vegetables are in the pot *in* the attic."
(Creider, 2002: 179)

b. *um-E:* *kè:t-í:n*
take.shelter-INST tree-that
"Take shelter in that tree!"
(Creider, 2002: 177)

6.3. *Interim summary*

We saw that postpositions' becoming morphologized to their following verbs to be applicative prefixes or prepositions' becoming morphologized to their preceding verbs to be applicative suffixes are plausible in different languages[15]. They can be seen as manifestations of Baker's (1988: 229-304) synchronic theory of 'Preposition Incorporation' in the domain of the diachrony. Note that the change from an applicative marker to an adposition is unlikely to occur in that, in general, the latter is the less grammaticalized category in terms of morphosyntactic dependency and desemanticization. Therefore, the relationship is not circular, at least in the sense that adposition-to-applicative

[15] In these cases, the reason why the applied arguments are core is that adpositions that originally accompanied them with no overt peripheral case government left there by attaching to the verb.

changes seem to be much easier to occur than applicative-to-adposition changes.

On the other hand, in my language sample, not every language shows such a clear historical background of its applicative marker(s) and there are many applicative markers whose origins are unknown. However, while, as shown above, there are several languages in which applicative prefixes may come from postpositions or applicative suffixes may come from prepositions, I find no clear cases to the contrary, i.e. applicative prefixes from prepositions or applicative suffixes from postpositions. Also, when an applicative affix does not have any semantically and phonologically similar adposition in that language, it is difficult to know whether it comes from an adposition. In such a case, however, the possibility is that the applicative affix arose from a postposition or preposition by the same mechanism illustrated in §§ 6.1-6.2 after which it was lost or underwent a drastic semantic change so that it cannot be replaced with the corresponding adposition anymore. Consequently, it is possible to say that there are general diachronic links between applicative prefixes and postpositions and between applicative suffixes and prepositions.

In that way, this section provided a diachronic explanation for the distribution of applicative marker types and word order patterns exhibited in § 3. However, it does not explain the whole picture. The correlation (a) does not state that every language with applicative prefix(es) has predominant OV order and postpositions or every language with applicative suffix(es) has predominant VO order and prepositions. In particular, as seen in § 3, there are many languages which have applicative suffix(es) and OV order and postpositions. The reason why this is the case will be discussed from a historical point of view in § 7.

7. *Diachronic link: applicative suffixes from verbs*

To explain how languages with applicative suffix(es) do not favor any particular word order patterns, it is necessary to consider the other major diachronic source of applicative markers than the adposition,

which is the verb (Haspelmath, 1995: 41-42; Baker, 1996: 431; Garrett, 1990; Peterson, 2007: 130-140; Creissels, 2010; Zúñiga and Kittilä, 2019: 222). Particularly, it would be helpful to see how verbs grammaticalize into benefactive applicative markers. The emergence of a benefactive applicative marker from a verb involves an intermediate stage referred to as «periphrastic benefactive constructions» (Peterson, 2007: 134-135) or «benefactive applicative periphrases» (BAP; Creissels, 2010). As outlined by Creissels (2010: 30), «applicative periphrases are biverbal constructions functionally comparable to monoverbal constructions headed by applicative verb forms» and «the two verbs they involve can be designated as *lexical verb* (abbreviated as Vlex) and *verb-operator* (abbreviated as Vop)». It is known that in many instances of benefactive applicative periphrases, the valency-operator verb is a verb "give" (Creissles, 2006: 79; 2010: 33; Peterson, 2007: 229-230). Creissels (2010) gives a three-way formal distinction of benefactive applicative periphrasis based on whether Vlex or Vop bears the marker: «the serializing type», «the marked-Vop type» and «the marked-Vlex type». The following are examples for each of the three classes:

(26) «The serializing type»[16]: Kana (Cross-river Bantu / Niger-Congo, Nigeria)
Ŋwíìkā wēè ɔb túú nɛ̀ Nūtɛ̀
Nwiika PST roast three_leave_yam give Nute
"Nwiika roasted a three-leave yam for Nute."
(Ikoro, 1996: 254, cited in Creissels, 2010: 39)

(27) «The marked-Vop type»: Efik (Benue-Congo / Niger-Congo, Nigeria)
nám útóm ɛmì nɔ̀ mî!
do work DEM give 1SG
"Do this work for me!"
(Welmers, 1973: 369-370, cited in Creissels, 2010: 39)

[16] Creissels's (2010: 37) definition of *serial verb construction* is as follows: «a complex predicate (i.e., a monoclausal construction involving two or more verbs) showing the following two characteristics: a. no linking element is present between the verbs involved in the construction; b. none of the verbs involved in the construction is in a form implying a non-autonomous status».

(28) «The marked-Vlex type»: Tamil (Dravidian, India/Sri Lanka)
Rājā Kumār-ukkuk katav-ait tirant-u KOṬUTT-ān
Raajaa Kumaar-DAT door-ACC open-CONV give.PAST-S3SGM
"Raajaa opened the door for Kumaar."
(Krishnamurti, 2003: 376, cited in Creissels, 2010: 44)

As suggested in Creissels (2010: 63), applicative affixes are supposed to arise from valency-operator verbs by further progress of grammaticalization. Similarly, Peterson (2007: 134-135) estimates that the Japanese periphrastic benefactive construction like the following which I consider corresponds to Creissels's (2010: 43) «the marked-Vlex type» is undergoing a process of grammaticalization towards a prototypical applicative construction:

(29) Japanese (Japonic, Japan)
boku=wa Hanako=ni hon=o kat-te YAT-ta
I=TOP Hanako=DAT book=ACC buy-CONJ give-PAST
"I bought a book for Hanako's sake."
(Shibatani, 1996: 160, cited in Peterson, 2007: 134)

In the context of my language sample, while some languages have applicative suffixes of an uncertain origin, this development pattern is confirmed for some languages, which will be discussed in the following. One such language is Nez Perce: Rude (1991: 186-187) suggests that the benefactive applicative suffix *-a'n*, as exemplified in (30a) below, is historically related to the verb *'eni* "give"[17], which also gave rise to a benefactive postposition, as seen in (30b):

(30) Nez Perce (Sahaptin-Klamath, Idaho)
a. *walc paa-ny-A'N-ya 'aayato-na*
knife 3S.3O-make-BEN-PAST woman-O
"He made the woman a knife."
(Rude, 1991: 186)

[17] According to RUDE (1991), all the other applicative markers in Nez Perce (suffixes) also have verbal origins (not "give").

b. *walas-na paa-ni-ya 'aayato-'AYN*
knife-O 3s.3O-make-PAST woman-BEN
"He made a knife for the woman."

(Rude, 1991: 186)

Secondly, as discussed in § 6.2, the applicative suffix *-ni* (~ *-ne*) in Dholuo, although its immediate source seems to be the preposition *ni*, may have its origins in a copula verb. An additional example of the copula usage of *ni* is provided below:

(31) Dholuo (Nilo-Saharan, Kenya/Tanzanya)
nyathi NI gi buk
child be with book
"The child has a book."

(Okoth-Okombo, 1997: 51)

Thirdly, the Tukang Besi applicative suffix *-ako* ultimately traces its origins to the verb *ako* "do for" (Donohue, 1999b: 242, 333), although the prepositional stage (32b) intervenes in some manner between the verbal (32a) and the applicative stages (32c). Another Tukang Besi applicative suffix *-ngkene* (32f) also exemplifies this development; its diachronic source seems to be the verb *kene* "accompany" (Donohue, 1999b: 187, 188) (32d), which also developed a prepositional usage (32e).

(32) Tukang Besi (Malayo-Polynesian, Indonesia)
a. *no-wila-AKO-'e na ina-no kua daoa*
3R-go-do.for-3OBJ NOM mother-3POSS ALL market
"They went for their mother to the market."

(Donohue, 1999b: 201)

b. *no-'ema te polisi AKO te ina-no*
3R-answer CORE policeman BEN CORE mother-3POSS
"He answered the policeman for his mother."

(Donohue, 1999b: 227)

c. *no-wila-AKO te ina-no i daoa*
3R-go-APPL CORE mother-3POSS OBL market
"She went to the market for her mother."
(Donohue, 1999b: 232)

d. *no-KENE te ina-no*
3R-accompany CORE mother-3POSS
"She accompanied her mother."
(Donohue, 1999b: 188)

e. *no-wila KENE ina-no*
3R-go accompany mother-3POSS
"She went with her mother."
(Donohue, 1999b: 188)

f. *no-wila-NGKENE te ina-no*
3R-go-accompany CORE mother-3POSS
"She went with her mother."
(Donohue, 1999b: 201)

The fourth example is from Barupu. As posited by Donohue (2003: 138), the applicative suffix *-ke* (33b) is «plausibly related to» the verb *ke* "sit" (33a):

(33) Barupu (Skou, Papua New Guines)
a. *bio=venavena k-o-KE-i*[sic] *pita*
woman=witch R-<3SG.F>-sit down
"The witch sat down."
(Donohue, 2003: 123)

b. *a k-u-ai-KE-ni*
rain R-3SG.F-rain-upon-1SG.F
"It's raining on me."
(Donohue, 2003: 122)

The fifth example is from Nahuatl. Baker (1996: 431) suggests that the Nahuatl applicative suffix *-lia* (~ *-huia*) as appearing in (34) below, comes from a serial verb "give".

(34) Nahuatl (Uto-Aztecan, Mexico)
ni-tē-tla-pāqui-LIA
I-INDEF-INDEF-wash-APPL
"I wash things for people."

(Andrews, 1975: 107)

Lastly, according to Lyle Campbell (personal communication, 2021), the diachronic source of the instrumental applicative suffix *-b'e* in K'iche', illustrated in (35) below, is *-b'eh* with the meanings of "road" and "to go", the latter being a verb-like meaning.

(35) K'iche' (Mayan, Guatemala)
če:ʔ *š-ø-in-č'aya-B'E-x* *a:w-e:h*
wood ASP-3SG.ABS-1SG.ERG-hit-INST-TR 2SG.POSS-GEN
"I used a stick to hit you."

(Campbell, 2000: 278)

What should be noted here is that, as suggested by each of the above examples, valency-operator verbs are more likely to result in suffixes than prefixes with regard to the lexical verb, so Creissels (2010: 33) mentions that «irrespective of the status of the language in question with respect to constituent order typology, 'give' almost always occupies the second position in BAPs» and concludes that «BAPs using verbs other than 'give' in valency operator function, or in which 'give' occurs in first position, are exceptional» (Creissels, 2010: 63; for further information, see Creissels, 2006: 79). It is suspected that verbs other than "give" are also likely to occur in the second position[18]. Anyway, Creissels's claim is further supported by the tendency which Bybee *et al.* (1990) discuss accompanies every constituent order pattern based on their extended cross-linguistic survey on «suffixing preference» as already mentioned in § 4, which can be summarized as: with regard to a stem, the following element is more likely to morphologize

[18] The only exceptional language I recognize is Creek, in which the dative applicative prefix *im-* is formally identical with a verb "give" and the instrumental applicative prefix *is-* is formally identical with a verb "take" (Jack B. Martin, personal communication, 2021).

to it to be a suffix than a preceding element is likely to morphologize to it to be a prefix. Concerning serial verbs in particular, Bybee *et al.* (1990: 16) also mention that «in some serial constructions, the second verb is the one to grammaticalize, yielding a postposed gram and perhaps eventually a suffix».

All that has been stated so far in the present section should be considered in conjunction with the fact that the verb "give" is the most frequent verbal source of applicative markers *in general*, as suggested by Baker (1996: 431), Creissles (2006: 81) and Zúñiga and Kittilä (2019: 222). As a result, it is plausible to conclude that when the diachronic source of an applicative affix is a verb, the applicative marker is more likely to be a suffix than a prefix. This is because the applicative affix is supposed to reflect its original position relative to the head verb, in accordance with the theoretical foundation discussed in § 4 and with Givón's (2015: 25) aphorism «if today's bound morphemes are yesterday's lexical words, then today's morphology is yesterday's syntax». The point is that this holds true regardless of the combination of constituent order and adposition order patterns that the language may possess (including OV/postpositions, VO/prepositions, VO/postpositions and OV/prepositions). Speaking of the six languages in my sample that were cited above, Nez Perce and Nahuatl are postpositional while the other four are prepositional. Thus, it is expected that several other applicative suffixes in my sample may prove to be of verbal origins.

The link between applicative suffixes and Creissels's (2010) valency-operators is considered also reflected in the following observation: A significant proportion of the languages in my sample classified as having applicative suffixes (16/37 cases or 45.9%) are characterized by the presence of only one applicative suffix (let us call such languages *single-applicative languages*), as illustrated in Table 3. This contrasts with the low frequency of single-applicative languages among those with applicative prefixes, which constitute only 21.4% (3 cases) of the 14 languages in my sample with applicative prefixes, as presented in Table 2. I posit that this contrast can be attributed to the previously mentioned fact that verbs "give" are

the most frequent source of applicative suffixes[19]. This presupposes that, in many cases, a language likely has only one highly frequent "give" verb, making it difficult for multiple applicative affixes to develop through that grammaticalization pathway. This situation is contrastive to that of adpositions, in that adpositions are more often than not numerous, each with more or less specific meanings that may warrant grammaticalization into applicative markers, which we saw is the case for many languages in §§ 6.1-6.2. This is further confirmed by the following observation of the sample languages: (i) there are 19 languages with applicative suffixes and postpositions. Out of them, as many as 10 languages (about 52.6%) have only one applicative suffix; (ii) there are 18 languages with applicative suffixes and prepositions. Out of them, only 6 languages (about 33.3%) have only one applicative suffix.

This observation suggests that, when prepositions become applicative suffixes, it may tend to result in more than one applicative suffix per language and, when non-prepositions (in many cases, verbs) become applicative suffixes, it may tend to result in only one applicative suffix per language. Maricopa shows a good contrast by itself, which has three applicative prefixes developed from postpositions (Gordon, 1986: 50), which was discussed in § 6.1, and one benefactive applicative suffix (Gordon, 1986: 85-87) which possibly originated from a valency-operator verb[20].

[19] The high frequency of benefactive applicatives in single-applicative languages (e.g. Kalkatungu, cf. Blake, 1979, and Thulung Rai, cf. Lahaussois, 2002) may be a further support, in that "give" verbs usually grammaticalize to benefactive applicative markers first (Baker, 1996: 431; Peterson, 2007: 229-230; Creissels, 2010: 34). This suggests that applicative markers whose origins are not explicitly known may have verbal origins.

[20] Also, the Warrongo applicative suffixes *-riL*$^{(1)}$ and *-riL*$^{(2)}$ could be integrated into one, which Tsunoda (1998) differentiates based on the fact that the semantic role of the applied argument is comitative when the base is intransitive whereas it is instrument when the base is transitive. If they are integrated, it will further strengthen the idea I am discussing here.

8. *Summary of the diachronic links*

When a language with applicative suffix(es) has predominant OV order and postpositions, it is likely that the applicative suffix(es) come(s) from valency-operator verb(s) because valency-operator verbs tend to become suffixes rather than prefixes and because the adposition possibility is ruled out. While it is possible that that language formerly had preposition(s) which yielded the applicative suffix(es) and subsequently disappeared, this seems to be an uncommon occurrence, in that word order changes are generally considered more radical than morphologization of an independent word to another.

When a language with applicative suffix(es) has predominant VO order and prepositions, it is likely that both the preposition-to-applicative morphological process and the verb-to-applicative morphological process are equally viable possibilities.

Thus, it is plausible that applicative suffixes generally develop from prepositions or valency-operator verbs, whereas applicative prefixes tend to develop from postpositions, rather than from valency-operator verbs. This discrepancy seems to explain the situation in which there are more languages with applicative suffix(es) (37/50 = 74%) than languages with applicative prefixes (14/50 = 28%), as shown in § 3 using my sample languages and stated in (b) in § 4. And it thus explains why a significant number of languages with applicative suffix(es) exhibit OV order and postpositions, whereas nearly all languages with applicative prefix(es) exhibit VO order and prepositions.

9. *Applicative marker types and word order: further correlations*

As well as the correlation between adposition order patterns and applicative marker types, the correlation between constituent order patterns and applicative marker types can be historically explained, in the following way. First of all, as discussed in Dryer (2019: 66),

the correlation between constituent order patterns and adposition order patterns is historically motivated: Specifically, when verbs are grammaticalized into adpositions, they inevitably result in prepositions in VO languages (for example, as already mentioned in § 7, Tukang Besi «is basically a VOS language» (Donohue, 1999b: 189) and its preposition-applicative *ako* is considered being originally a verb (Donohue, 1999b: 242, 333) and in postpositions in OV languages. Then, in turn, prepositions are grammaticalized into applicative suffixes and postpositions into applicative prefixes, so constituent order patterns and applicative marker types prove to be connected via adposition order patterns. Of course, this is not relevant to applicative markers developed from verbs in applicative periphrases.

Dryer (2019: 67-69) also discusses a correlation between GENITIVE AND NOUN order and adposition order patterns whereby languages with GenN order are likely to have postpositions, rather than prepositions, and languages with NGen order are likely to have prepositions, rather than postpositions. This is historically motivated as well, in that adpositions may arise from head nouns in genitive constructions, as Dryer illustrates with English:

(36) English (Germanic, world language)
  a. *in the side of* > NP *inside* NP
  b. *by the side of* > NP *beside* NP
  c. *by the cause of* > NP *because of* NP

(Dryer, 2019: 68)

Based on that, it should be the case as well that GENITIVE AND NOUN order has such a historical connection with types of applicative markers that arise from adpositions.

Demonstrating these connections by directly comparing actual examples of applicative marker types on the one hand and constituent order patterns/GENITIVE AND NOUN order patterns on the other is left for future studies.

10. *Other sources of applicative markers*

In addition to adpositions and verbs, it is known that adverbs, nouns and causative markers may be sources of applicative markers (e.g. Peterson, 2007: 131, 133-141). However, such instances are substantially limited compared with adpositional or verbal source instances (as suggested by Peterson, 2007), so they are unlikely to bring any significant effect on the correlation proposed in the present study. Indeed, my sample languages contain only a handful of such instances. Applicative markers in my sample languages which I acknowledge likely arise from adverbs are: the prefixes *ic-* (Dakota; Adam, 2019 [1878]: 24; Riggs, 2016 [1852]: 79), *gi-* (Winnebago; which also has a related postposition; Lipkind, 1945: 52) and *a-* (Georgian; Harris, 2003: 65). Whether adverbs are more subject to grammaticalization into applicative markers in postpositional (or OV) languages than in prepositional (or VO) languages, whether applicative markers from adverbs tend to be prefixes or suffixes or whether it depends on word order patterns in that language should be investigated in future studies. Applicative markers of plausible nominal origins in my sample languages are: the prefixes *o-* (Ainu; Kindaichi, 1993: 270-271; Bugaeva, 2010: 782, 784) and *im-* (Ngan'gityemerri; Reid, 1990) and the suffix *-b'e* (K'iche'; Lyle Campbell, personal communication, 2021). Applicative markers in my sample languages which are considered to have emerged thorough a reanalysis of causative affixes are: the suffixes *-iish* (Rwanda; Kimenyi, 1988) and *-eesh* (Swahili; Song, 1996: 94), which are apparently related. Applicative markers developed from nouns or causative markers need to be studied with regard to more languages as well.

11. *Conclusion*

Applicative prefixes are likely to co-occur with the OV-postposition combination whereas applicative suffixes co-occur with the VO-preposition combination and the OV-postposition combination to similar extents. This is a correlation related to word order patterns

that has never been proposed, and can be explained by the following facts from a diachronic perspective. First, applicative prefixes and applicative suffixes often develop from postpositions and prepositions respectively, through what can be seen as a historical manifestation of Baker's (1988) 'Preposition Incorporation'. Second, applicative suffixes can develop from second-position (final-position) verbs (often, "give") in periphrastic applicative constructions, in which Creissels's (2010) 'valency-operator' verbs are in many cases postposed to lexical verbs. The second fact is compatible with the observation that, of the languages in my sample that are classified as ones with applicative suffix(es), a good proportion has only one applicative suffix.

Of course, adpositions and verbs are never the only possible diachronic sources of applicative markers, but other sources are known to be possible as well, including nouns, adverbs and causative markers (Peterson, 2007: 131, 133-141), and some languages in and out of my sample have not been provided with information about their applicative markers' origins. However, adpositions and verbs are much more common than them as sources of applicative markers (Peterson, 2007: 123-171). Moreover, the historical links between postpositions and applicative prefixes, between prepositions and applicative suffixes and between valency-operator verbs and applicative suffixes are secure, given the theoretical reasonableness and typological evidence I presented. Thus, it seems safe to say that the correlation claimed primarily stems from the way postpositions, prepositions and verbs develop into applicative markers and which applicative marker types these sources primarily result in respectively.

Finally, there is another implication the present study has to offer. Greenberg (1963: 56-57), Hawkins and Gilligan (1988) and Bybee *et al.* (1990) suggest that OV languages are more likely to have a suffix predominance than VO languages. In historical terms, I consider that one contribution to this tendency is the well-observed processes whereby postpositions morphologize to their preceding governed terms and prepositions morphologize to their following governed terms (which was discussed in § 4). However, the processes the present study focused on entail the opposite directions, whereby postpositions morphologize to their following verbs and prepositions morphologize to their preceding

verbs[21]. Thus, it is expected that, if suffixes and prefixes originating in these pathways, namely applicative affixes of adpositional origins, are excluded from the scope, a stronger correlation between affix positions (affix types) and adposition orders will be gained than has been claimed.

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Abbreviations

ABS-absolutive, ACC-accusative, ALL-allative, APPL-applicative, ASP-aspect, AUX-auxiliary, AUGV-augment vowel on nouns, BEN-benefactive, CONV-converb, CONJ-conjunction, COP-copula, DAT-dative, DECL-declarative, DEF-definite, DEM-demonstrative, DIR-direction, EMP-emphasis, ERG-ergative, EVD-evidentiality, F-female, FUT-future, GEN-genitive, IMP-imperative, INCL-inclusive, INCMPL-incomplete, IND-indicative, INDEF-indefinitive, INST-instrumental, IPFV-imperfective, LOC-locative, M-masculine, MOD-modifier, N-noun, NEG-negation, NFUT-nonfuture, NOM-nominative, NP-noun phrase, O-object, OBL-oblique, PERF-perfective, PL-plural, POSS-possessive, PRES-present, PROG-progressive, PSP-postposition, PST-past, REAL-realis, REC-recipient, RP-relational preverb, SBJ-subject, SOC-sociative, SG-singular, TNS-tense, TR-transitive, TRR-transitivizer, WP-witnessed past tense, 1-first person, 2-second person, 3-third person.

[21] As suggested in § 4, this helps to stress the assumption that the positive correlation between prefixes and postpositions and between suffixes and prepositions basically cannot be extended to other phenomena from applicative markers (however, I suspect a similar correlation between construct marker types, cf. Creissels, 2009; 2022, and adposition order patterns to which a similar explanation could be applied).

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