Explaining language universals in diachronic perspective - 2

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Functional-typological explanations in diachrony

Classical explanations of typological universals usually postulate **some type of optimization of grammatical structure/efficiency**:

- If A does not occur in the absence of B, or is significantly rarer, this is because **B is more efficient**, in the sense of being **more advantageous for speakers** (usually because of processing or usage-based factors).
- So grammars are efficient in the sense that
  - sometimes, only more efficient constructions are used
  - less efficient constructions are only used if more efficient constructions are also used
  - less efficient constructions are generally less frequent than more efficient ones.

Functional-typological explanations in diachrony

Explanations in terms of efficiency, however, are based on the **synchronic cross-linguistic distribution** of particular grammatical traits, e.g.

- the cross-linguistic distribution of zero vs. overt marking across different grammatical categories
- co-occurrence patterns for different word orders cross-linguistically

But typological universals are generally assumed to be a result of **diachronic phenomena** that give rise to the relevant constructions and shape their cross-linguistic distribution over time (as opposed to components of a speaker's mental grammar that operate synchronically, of the type postulated in generative approaches).

Functional-typological explanations in diachrony

So, if typological universals are assumed to reflect efficiency principles, these principles should play a role in the diachronic phenomena responsible for the relevant cross-linguistic distributions, namely

- the **development** of the relevant constructions from one language to another
- the **retention** or **loss** of these constructions across different generations of speakers once they are in place in a language.

Functional-typological explanations in diachrony

We can look at a number of diachronic processes that give rise to several grammatical configurations captured by typological universals:

- these processes do not appear to be triggered by properties of the resulting configurations, rather by properties of particular source constructions and developmental mechanisms;
- the properties of the resulting configurations also directly mirror the properties of particular source constructions and developmental mechanisms, hence they cannot actually be taken as evidence for principles independent of these constructions;
- individual configurations are a result of several distinct processes, not amenable to a unitary explanatory principle: the effects of these processes should be disentangled when trying to account for the configuration.

Functional-typological explanations in diachrony

Zero vs. overt marking for singular and plural:

- Languages can use overt marking for plural and zero marking for singular (e.g. English ***friend/ friends***), but usually not the other way round. This is traditionally explained by assuming that, since plural is less frequent, it is more in need to be disambiguated through overt marking (Greenberg 1966, Croft 2003, Haspelmath 2008).
- But how do languages actually develop overt marking for plural and zero marking for singular?

Functional-typological explanations in diachrony

Sometimes, in a situation where singular and plural are both originally overtly marked, regular sound changes may lead to the elimination of the singular marker:

- This leads to singulars becoming zero marked, whereas plurals retain overt marking.
- For example, in English, singular and plural were both originally overtly marked in most cases, and the current configuration with zero marked singulars and *-s* marked plurals resulted from a series of sound changes that led to the elimination of all inflectional endings except genitive singular *-s* and plural *-es* (Mossé 1949).

Functional-typological explanations in diachrony

		Nouns class I	Nouns class II	Nouns class III
SG	NOM	-	-e	-e
	ACC	-	-e	-e
	GEN	-(e)s	-es	-e
	DAT	-e	-e	-e
PL	NOM	-(e)s	-(e)s	-en GEN -en(e)

Functional-typological explanations in diachrony

In such cases, the elimination of the singular marker does not appear to be related to the lower need to disambiguate singular as opposed to plural:

- Sound change depends on the phonological properties of the relevant elements, not the relative need to disambiguate the categories encoded by these elements.
- The process targets singular markers because of their phonological properties.
- Such processes should in principle also target plural markers, it they have the relevant phonological properties: this does happen in some languages, yielding configurations with overtly marked singulars and zero marked plurals.

Functional-typological explanations in diachrony

Sinhala (Indo-European): some inanimate nouns have overtly marked singulars and zero marked plurals (e.g. *pot-**a**/ pot* 'book-SG/ book.PL'). This was a result of phonetic changes leading to the loss of the plural ending of a specific inflectional class in the ancestor language (Nitz and Nordhoff 2010: 250-6).

Nchanti (Niger-Congo): Nouns in classes 3/4 have overt marking in the singular and zero marking in the plural, e.g. *k**ʷ**ə̄ŋ/ kə̄ŋ* 'firewood.SG/ firewood.PL, *k**ʷ**ēē/ kēē* 'moon.SG/ moon.PL'. Originally, both singular and plural were marked overtly through the two prefixes **u-* and **i-* respectively. As these were eliminated, the singular prefix led to the labialization of the initial consonant of the stem, while the plural prefix left no trace (Hombert 1980)

Functional-typological explanations in diachrony

In other cases, singular and plural are both originally zero marked (i.e. the language does not distinguish between the two), and overt markers for plural can evolve though the reinterpretation of pre-existing elements. As a result, zero marking becomes restricted to singular.

Functional-typological explanations in diachrony

In partitive constructions with plural quantifiers ('all, many of them') the quantifier is dropped, and the plural meaning associated with it is transferred to a co-occurring element.

(1) Bengali (Indo-European)

(a) *chēlē-***rā**
child-GEN
'children' (15th century: Chatterji 1926: 736)

(b) *āmhā-***rā** *såbå*
we-GEN all
'all of us' (14th century: Chatterji: 735)

Functional-typological explanations in diachrony

(2) Assamese (Indo-European)

(a) *chātar-***hãt**
student-PL

'Students' (Modern Assamese: Kakati 1962: 295)

(b) *dui-***hanta**
two-be.PTCPL

'Both of them' (Early Assamese, lit. 'being two': Kakati 1962: 283)

Functional-typological explanations in diachrony

In such cases, the plural marker arises as plural meaning is transfered from one component of an expression (a plural quantifier) to another:

- This is a metonymization process triggered by the co-occurrence of the relevant elements, so there is no evidence that it is related to the need to disambiguate plural (in addition, plural meaning is already conveyed by the quantifier).
- This process results into the development of a plural marker because the quantifier is plural. When the quantifier refers to a singular entity, however, the process can give rise to overt singular markers, and this too can lead to configurations with overtly marked singulars and zero marked plurals ('one **of** the women' > 'woman **SG**').

Functional-typological explanations in diachrony

(3) Imonda (Border)

(a) *agõ-***ianèi***-m* *ainam* *fa-i-kõhõ*
women-NONPL-GL quickly CL-LNK-go
'He grabbed the woman' (Seiler 1985: 194)

(b) *mag-m* *ad-***ianèi***-m*
one-GL boy-SRC-GL
'To one of the boys' (Seiler 1985: 219)

Functional-typological explanations in diachrony

In yet other cases, plural markers evolve from elements that do not originally encode plurality, but are inherently or contextually associated with this notion (distributives: 'house **here and there**' > 'house **PL**'; expressions of multitude such as 'all', 'several', 'many'; 'people').

(4) Southern Paiute (Uto-Aztecan)

(a) *qa'nɪ* / **qaŋqa'nɪ**
house / house.DISTR
'house, houses' (Sapir 1930-1: 258)

(b) *piŋwa-* / **pivíŋwa.mï**
wife / wife.DISTR.their
'wife / their (vis.) wives' (Sapir 1930-1: 257)

Functional-typological explanations in diachrony

(5) Bhojpuri (Indo-European)

(a) *ghar* **sahb**
house all
'houses' (Grierson 1883-1887: 7)

(b) *mali* **log**
gardener people
'gardeners' (Grierson 1883-1887: 7)

Functional-typological explanations in diachrony

(6) Tlingit (Na-Dene)

(a) *yuyā* *LAn-***q!**
big whale-COLL
'a big whale' (Swanton 1921-1922: 169)

(b) *ɬīngît* / *ɬīngît'-***q!**
man / man-COLL
'man or men / many man together' (Swanton 1921-1922: 169)

(c) *gux* / *gux-***q!**
slave / slave-COLL
'slave / slaves' (Swanton 1921-1922: 169)

(d) *hît* / *hî'-***q!î**
house house-COLL
'house / houses' (Swanton 1921-1922: 169)

Functional-typological explanations in diachrony

In these cases, plurality becomes the main meaning of some expression as other more specific meaning components (distributivity, multitude) are dropped:

- This is a process of bleaching, possibly triggered by contexts where the additional meaning components are communicatively peripheral (e.g. 'mark where all the windows are' = 'mark where the windows are', 'a lot of people do that, but I don't' = 'people do that, but I don't').
- In this case too, then, there is no obvious evidence that the development of the plural marker is triggered by the need to disambiguate plural.
- The process results into the development of a plural marker because the source elements are ones associated with the notion of plurality. At least some source elements that can evolve into singular markers do so, in spite of the lower need to disambiguate singular as opposed to plural.

Functional-typological explanations in diachrony

For example, demonstrative and third person pronouns with distinct singular and plural forms often grammaticalize into gender markers: this gives rise to overt gender markers which also mark singular and plural

		SG	PL	
Nouns	M	/ȭá-**mà**	/ȭá-//**u‘a**	‘boy’
	F	/ȭá-**hɛ̀**	/ȭá-**djì**	‘girl
	C	/ȭá-**(’à)**, /ȭá-**djì**	ȭá-**nà**	‘child’
Pronouns	M	xà-**má**, á-**mà**, i-**mà**	xà-//**u̱á**, á-//**u̱á**, í-//**u̱á**	‘he’
	F	xà-**hɛ̀**, á–**hɛ̀**, i–**hɛ̀**	xà-**djí**, á-**djí**, í-**djí**	‘she’
	C	(xa-’**à**)	xà-**nà**, á-**nà**, í-**nà**	‘it’

Table 1: Gender/number markers and third person pronouns in Kxoe (Khoisan: Heine 1982: 211)

Functional-typological explanations in diachrony

What these facts show:

- Several processes that result into the use of zero marking for singular and overt marking for plural are not obviously driven by the higher need to disambiguate plural.
- The fact that these processes lead to zero marking for singular and overt marking for plural is a direct reflection of intrinsic properties of particulat source constructions or developmental mechanisms, rather than the higher need to disambiguate plural.
- Overt singular markers are eliminated because of their phonogical properties, which lead to their undergoing the relevant sound changes;
- Some source constructions are inherently or contextually associated with the notion of plurality, so they give rise to (overt) plural markers.
- Other source constructions or developmental mechanisms give rise to different outputs (overt marking for singular and zero marking for plural, overt marking for both).

Functional-typological explanations in diachrony

- This suggests that differences in the frequency of particular outputs (zero marking for singular and overt marking for plural as opposed to overt marking for singular and zero marking for plural) reflect **differences in the frequencies of particular source constructions or developmental mechanisms that give rise to those outputs**, rather than **properties of the output** (such as the fact that the output complies with the relative need to disambiguate singular and plural).
- These differences need to be accounted for, but this is a separate research issue.
- Finally, the various processes that give rise to zero marking for singular and overt marking for plural are rather different in nature (sound change, metonymization, semantic bleaching) and lead to that output for different reasons, so there is no evidence that the output reflects some overarching principle (such as the relative need to disambiguate singular and plural).

Functional-typological explanations in diachrony

RelN → GN/ NG → NRel

- When relative clauses are preposed, possessors are usually also preposed, or, equivalently, when possessors are postposed, relative clauses are usually also postposed. Possessors, however, can be preposed also when relative clauses are postposed (Dryer 2007, among others).
- This has been explained by postulating **processing preferences** related to the head-modifier structure of the relevant constructions (Hawkins 1983, 1994, 2004, 2014; Dryer 1992).

Functional-typological explanations in diachrony

- Relative clauses and possessors are modifiers. When modifiers are preposed to their heads (e.g. RelN, GN), they must be held in working memory till the head is recognized.
- More structurally complex modifiers, such as relative clauses, place a heavier burden on working memory and lead to a longer delay in head recognition than less structurally complex modifiers, such as possessors.
- This determines general processing preferences for postposed relative clauses over postposed possessors, and preposed possessors over preposed relative clauses.
- Because of these preferences, (i) postposed possessors should occur when postposed relative clauses also occur, and (ii) preposed relative clauses should occur when preposed possessors also occur, whereas (iii) postposed relative clauses and preposed possessors can occur independently.

Functional-typological explanations

In several cases where relative clauses and possessors have the same order (RelN and GN, NG and NRel), the relative clause construction and the possessive construction are derived from a single source, so that relative clause order and possessor order both continue the order of the source.

(7) Bilin (Cushitic)

(a) *'aqwa ja'ag-na-**x^{w}**-əl*
water drink-1PL-**M.REL**-to

'to water that we do not drink' (originally 'to water, **the one** (that) we do not drink': Aristar 1991: 13)

(b) *ti'idad adäri-**x^{w}**-əd*
order lord-**M.GEN**-DAT

'by the order of the lord' (originally 'by the order, **the one** of the lord': Aristar1991: 13)

Functional-typological explanations in diachrony

(8) Newari (Tibeto-Burman)

(a) *ji-nə* *nyan-a-**mha*** *nya*
1SG-ERG buy-PAST-NMLZ/REL fish

'The fish that I bought' (originally 'the thing that I bought, a fish': DeLancey 1986, 2002: 60)

(b) *ra:m-ya:-**mha*** *khica:*
Ram-GEN-NMLZ/POSS dog

'Rham's dog' (originally 'Ram's thing, a dog': DeLancey 1986, 2002: 61)

Functional-typological explanations in diachrony

(9) Middle Chinese

(a) *liao* *wan* *bing* **di** *iao*
cure ten.thousand sickness REL medicine

'a medicine that cures all sickness' (originally 'the one (that) cures ten thousand sickness, medicine', or 'cures ten thousand sickness, this medicine': Yap, Choi and Cheung 2010: 77-9)

(b) *wo* **di** *xue wen*
1SG GEN knowledge

'my knowledge' (originally, 'my one, knowledge' or 'me, this knowledge': Yap, Choi and Cheung 2010: 77-9)

Functional-typological explanations in diachrony

In other cases, the relative clause construction is derived from the possessive construction, and continues the order of the latter.

(10) Akkadian (Semitic)

tuppi	*addin-u-šum*
tablet.of	I.gave-SUBJ-to.him

'the tablet **that** I gave to him' (originally 'the tablet **of** my giving to him': Deutscher 2001: 410)

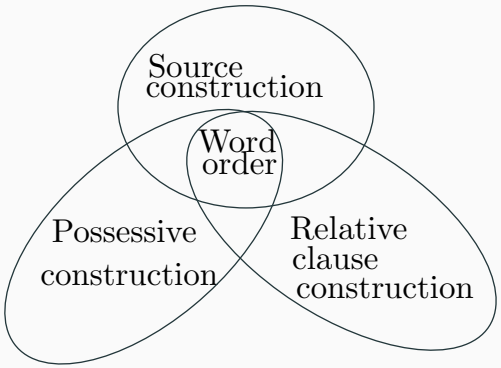
(11) Classical Tibetan (Tibeto-Burman)

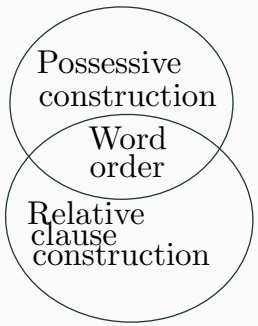
*bcad-**pa-'i***	*shing*
cut-NOMLZ-GEN	tree

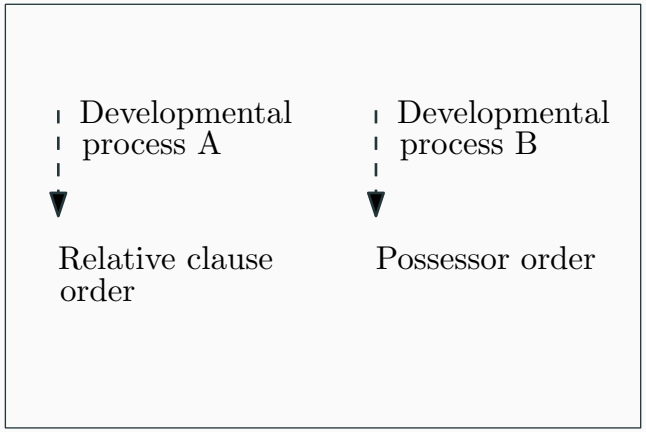
'the tree that has been cut' (literally 'the tree of cutting': DeLancey 1999: 233)

Functional-typological explanations in diachrony

In such cases, relative clause order and possessor order are actually **one and the same order**: either they continue the order of a single source that gives rise to both the relative clause construction and the possessive construction, or one of these constructions is derived from and inherits the order of the other. This is different from cases where **two separate developmental processes** independently give rise to each order.







No evidence for efficiency principles that **operate independently for each order** and **lead to their co-occurrence**, because there are **no distinct orders** to start with.

Functional-typological explanations in diachrony

Such principles can only be postulated in cases where the two orders are really distinct, in the sense that they originate independently (so we should disentangle these cases in order to posit the principles).

(12) Tswana (Niger-Congo)

(a) *mʊ̀-sádì* **jó** *ǃʊ́-ɔ̀pɛ́là-ˊŋ*
CL1-woman-CSTR CL1:LK S.CL1-sing:PRS-REL
ǃjó-lé
CL1:DEM-DIST

'That woman who is singing' (relative clause has a linker derived from a demonstrative: Creissels 2017: 12)

(b) *b-àná* **b-áχà** *kítsɔ́*
CL2-child CL2-place.of Kitso

'Kitso's children.' (originally 'the children at Kitso's place': Creissels 2017: 13)

Functional-typological explanations in diachrony

(13) Old French

(a) *la* *nuit* **que** *mesire* *Gauvain* *jut* *avec* *la*
the night that lord Gauvain slept with the
bele *file* *Helient* *le* *roi* *de* *Norgales*
beautiful daughter Helient the king of Norgales

'The night lord Gauvain slept with Helient, the beautiful daughter of the king of Norgales' (Schafroth 1993: 84: relative element derived from a corresponding Latin one, in turn derived from an interrogative/indefinite element)

(b) *les* *cols* **de** *lor* *chevaus*
the necks of their horses

'the necks of their horses' (Heine 1997: possessive element derived from an adposition meaning 'from')

Functional-typological explanations in diachrony

Also, while the synchronic correlation between possessor order and relative clause order has been explained in terms of the head-modifier structure of possessive constructions and relative clause constructions, relative clause constructions and possessive constructions often originate from constructions that do not have a head-modifier structure.

Functional-typological explanations in diachrony

Relative clause constructions and possessive constructions can both originate from appositional constructions:

- In many analyses of these constructions, the two appositives do not stand in a head-modifier relationship.
- Rather, they are two coreferential expressions with the same syntactic status within the sentence, i.e. '**X**$_i$, the VERBing **one**$_i$; '**X**$_i$, Y's **thing**$_i$' (Quirk et al. 1985, Keizer 2007, Bauer 2017, among others)

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Functional-typological explanations in diachrony

Relative clause constructions can also originate from combinations of two independent clauses: one of the two clauses evolves into a relative clause, while some NP in the other clause becomes the head.

(17) Ancient Greek

thaúmazen	*pur-à*	*poll-à*		
marvel-IMPF.3SG	fire-ACC.PL	many-ACC.PL		
tà	*kaíeto*		*Ilióthi*	*prò*
REL/ANAPH.NOM.PL	burn-IMPF-3SG		Troy	before

'He marveled at the many fires, those burned before Troy/ they burned before Troy.' > 'He marveled at the many fires that burned before Troy.' (Homer, Iliad 10.12; Monteil 1963: 28)

In this case too, the elements that give rise to the relative clause and the head do not stand in a head-modifier relationship.

Functional-typological explanations in diachrony

Possessive constructions can be derived from structures where the possessor is part of a predicating expression or a topic, rather than a modifying expression (Schuh 1983, Heine 1987).

(18) Kanakuru (Chadic)

ɓili **ma** *lowoi*
horn POSS boy

'the boy's horn' (possessive element derived from a demonstrative, under one possible analysis in a construction of the type 'the horn (is) that (of) the boy': Schuh 1983: 183, 193)

(19) Kairiru (Oceanic)

Nur yaqal qajuo-ny
Nur he cousin-his

'Nur's cousin' (Lichtenberk 1985: 99)

Functional-typological explanations in diachrony

What these facts show: In many cases, relative clause order and possessor order cannot be accounted for in terms of processing principles that (i) independently apply to each of these orders and (ii) pertain to the head-modifier structure of the construction:

- The relative clause construction and the possessive construction may be derived from one another, so that the co-occurrence of their orders is explained by their once being one and the same construction.
- In such cases, any proposed explanatory principle will only be relevant to the order of the source construction.
- Such cases should then be disentangled from those where relative clause order and possessor order originate independently, so that the proposed explanatory principles should apply to both orders.

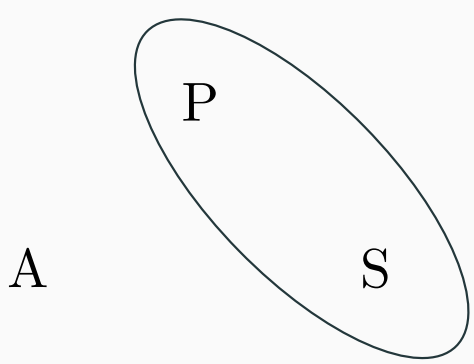
Functional-typological explanations in diachrony

- Relative clause order and possessor order reflect the order of the source construction
  - any proposed explanatory principle should apply to the order of the source construction
  - but the source construction may have a different syntactic structure, in which case any principles pertaining to the syntactic structure of the relative clause construction or the possessor construction will not apply
- So, in order to account for the correlation between relative clause order and possessor order, we have to factor in the effects of multiple source constructions and developmental processes that may give rise to the relevant constructions cross-linguistically.

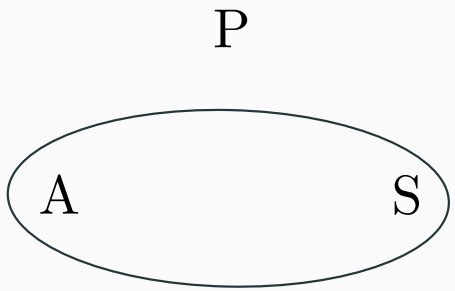
Functional-typological explanations in diachrony

Case marking alignment: languages display different alignment patterns attested for the three arguments A, P, and S (expecially ergative, accusative, and active alignment). Usually,

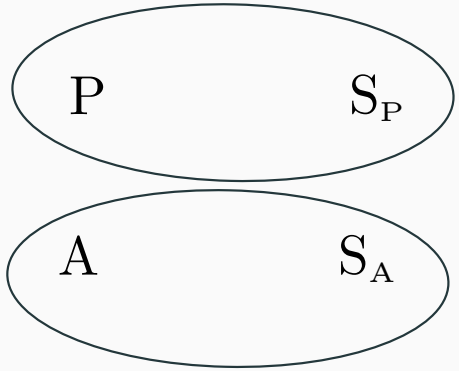
- one of the two arguments A or P has dedicated case marking, in the sense of a case form not used for other arguments
- the other argument is encoded by the same form used for S arguments.



Ergative alignment



Accusative alignment



Active alignment

Functional-typological explanations in diachrony

A classical explanation (Comrie 1989, Dixon 1994, among many others):

- A and P arguments co-occur in transitive clauses, so they need to be disambiguated from each other through the use of different case forms.
- One of these forms will be used for the relevant argument A or P only, whereas the other form can also be used for S arguments, because these arguments occur in isolation and therefore do not need to be disambiguated from other arguments.
- This explains the cross-linguistic rarity of (i) patterns A and P arguments are encoded in the same way, whereas S arguments have dedicated case marking, and (ii) patterns where A, S, and P arguments all have dedicated case marking (tripartite alignment).

Functional-typological explanations in diachrony

Another classical idea: Different arguments are encoded in the same way because of their semantic or pragmatic similarities (Moravcsik 1978, DeLancey 1981, DuBois 1985 and 1987, Comrie 1989, Dixon 1994, Kibrik 1997, Mithun and Chafe 1999, Givon 2001):

- A and S arguments are encoded in the same way because of their topical status, the fact that their referents are typically starting points in discourse, or (for active alignment) the fact that they both encode agentive participants.
- S and P arguments are encoded in the same way because they are are both used to introduce new discourse participants or the participants most directly involved in the state of affairs being described, or (for active alignment) because certain S arguments have patient-like features.

Functional-typological explanations in diachrony

These explanations imply that case marking alignment reflects **general principles of optimization in the use of case marking**.

- **Economy**: the use of dedicated case marking is limited to cases where it is really necessary, that is, to arguments more in need of disambiguation.
- **Iconicity**: Arguments that are semantically or pragmatically similar are treated in the same way in terms of case marking.

Functional-typological explanations in diachrony

These ideas have been extremely influential, both in language typology and elsewhere:

- psycholinguistic research on particular optimization principles (e.g. Fedzechkina, Jaeger and Newport 2012, Kurumada and Jaeger 2015)
- theoretical models where these principles are propertly incorporated into a speaker's mental grammar (e.g. Aissen 2003, deHoop and Malchukov 2008)
- Many generative approaches also postulate principles specifically pertaining to case marking alignment (though not necessarily ones of optimization), such as different case-checking rules, or different rankings of case assignment constraints (Farrell 2005, Butt 2006, Baker 2015).

Functional-typological explanations in diachrony

Assumptions about the possible motivations for case marking alignment, however, are based on

- the **synchronic properties** of the relevant alignment patterns
- the **cross-linguistic rarity** of other logically possible patterns
- not **diachronic phenomena** responsible for the **emergence** or **cross-linguistic frequency** of individual patterns.

Functional-typological explanations in diachrony

What happens if we take into account such diachronic phenomena (Cristofaro 2024)?

- Grammaticalization studies and studies of the evolution of case marking alignment in individual languages provide data about several recurrent processes involved in the **development** of different alignment patterns cross-linguistically.
- These processes provide no evidence that the relevant alignment patterns **emerge** because of principles of optimization in the use of case marking.
- Such principles may possibly play a role in the **retention or loss** of individual patterns once they are in place in a language, thus ultimately contributing to their relative cross-linguistic frequency. This phenomenon, however, remains to be investigated.

Functional-typological explanations in diachrony

Case marking alignment can emerge through the **reanalysis of the argument structure** of several types of source constructions. Depending on the properties of the source construction, this may give rise to different alignment patterns (Harris and Campbell 1995, Gildea 1998, Creissels 2008, among many others).

Functional-typological explanations in diachrony

Various types of intransitive resultative constructions are reanalysed as transitive ones: 'X was, is VERBed by Y', 'X is Y's VERBee', 'To Y is a VERBed X' > 'Y VERBed X':

- X is a notional patient encoded as an S argument, which evolves into a P argument and retains the marking used for S arguments.
- Y is a notional agent encoded an oblique or a possessor, which evolves into an A argument and retains its original marking, yielding an **ergative pattern**.

(20) Late Middle Indo-Aryan

laddh-a	*tuhuṃ*	**maiṃ**	*im-aṃmi*
find-PERF.PTCPL.NOM	2SG.NOM	1SG.INSTR	this-LOC
van-aṃmi			
wood-LOC			

'I have found you in this forest.' (originally 'You are found in this forest by me.': Bubenik 1998: 148)

Functional-typological explanations in diachrony

Intransitive locative constructions of the type 'Y is at the VERBing of X' are reinterpreted as transitive progressive constructions, 'Y is VERBing X'.

- Y is a notional agent encoded as an S argument, which evolves into an A argument and retains the marking used for S arguments.
- X is a notional patient encoded as a possessor, which evolves into a P argument and retains its original possessor marking, yielding an **accusative pattern**.

(21) Wayana (Carib)

*ɨ-pakoro-**n***	*iri-Ø*	*pək*	*wai*
1-house-POSS/OBJ	make-NOMLZ	at	1.be

'I'm making my house.' (originally 'I am busy.at/occupied with the making of my house': Gildea 1998: 201)

Functional-typological explanations in diachrony

Case marking alignment also arises as elements not originally used to encode grammatical relations **grammaticalize into case markers for some co-occurring argument**, so that this argument is no longer encoded in the same way as the other arguments.

- **Accusative** alignment emerges as various types of source elements grammaticalize into markers for P arguments, or for A and S arguments.

Functional-typological explanations in diachrony

- For example, 'take' verb evolve into markers for their former P argument. ('**take** X (and) VERB (X)' > '**OBJ** X VERB').

(22) Twi (Niger-Congo)

(a) *o-***de** *afoa* *ce* *boha-m*
he-OBJ sword put scabbard-inside
'He put the sword into the scabbard' (Lord 1993: 66)

ɔkɔm **de** *me*
hunger take me
'Hunger takes me' (Lord 1993: 70) [from an earlier description of the language]

Functional-typological explanations in diachrony

- topic markers used for topicalized P or A and S arguments evolve into markers for these arguments.

(23) Kanuri (Nilo-Saharan)

(a) *Músa* *shí-***ga** *cúro*
Musa 3SG-OBJ saw
'Musa saw him' (Cyffer 1998: 52) ()

(b) *wú-***ga**
1SG-as.for
'As for me' (Cyffer 1998: 52)

Functional-typological explanations in diachrony

(24) Korean (isolate)

(a) *seycon-i* *sangtwusan-ay* *ka-sy-a* *[...]*
Bhudda-NOM Mt.Sangdu-to go-HON-and

'Bhudda went to Mt. Sangdu and ...' (Rhee 2008: 247)

(b) *seycon* i *sangtwusan-ay* *ka-sy-a* *[...]*
Bhudda this Mt.Sangdu-to go-HON-and

'Bhudda, this went to Mt. Sangdu and ...' (Middle Korean, 1447, Sekposangcel: Rhee 2008: 247)

Functional-typological explanations in diachrony

- **Ergative alignment** emerges as various types of source elements evolve into markers for A arguments.
- For example, elements used to focalize A arguments evolve into markers for these arguments.

(25) Kuuk Thaayorre (Australian)

(a) *pam* *coconut-***nthurr** *theernga-rr*
man coconut-ERG kill-PAST.PFV
'the coconut [fell and] killed the man.' (Gaby 2008: 1682)

(b) *nhangnam* *yirr-ntam.* *nganip* *thon=***thurr**
mother different-ABL father one=FOC
'They're from different mothers [but] one father.' (Gaby 2008: 1684)

Functional-typological explanations in diachrony

- Indexical elements (demonstratives, third person pronouns) used to emphasize that some A argument is an unexpected agent evolve into markers for that argument ('X, **this one**, did Y' or 'X, **he**, did Y' became 'X **ERG** did Y': McGregor 2008)

(26) Bagandji (Australian)

*yaḍu-***ḍuru** *gāndi-d-uru-ana*
wind-DEM/ERG carry-FUT-3SG.SUBJ-3SG.OBJ

'This wind will carry it along / The wind will carry it along' (Hercus 1982: 63)

Phonological reduction

Case marking alignment can also be a result of **phonological processes** that give rise to **reduced forms** for particular arguments, so that these are no longer encoded in the same way as other arguments.

- **Accusative alignment** for pronouns can emerge as pronominal A and S arguments get reduced forms due to their high discourse frequency, whereas P arguments retain the original unreduced form.

	A, S	P
1SG	***mo***	*mwa*
2SG	***to***	*twa*

Table 2: Pronominal declension in Louisiana Creole (Haspelmath & the APiCS Consortium 2013: 233)

Phonological reduction

- **Ergative alignment** for nouns can emerge as nominal S and P arguments get reduced forms due to their reduced focal prominence, whereas A arguments retain the original unreduced form.
  - second declension nouns in Kuuk Thaayorre: *yuk*-**u** 'tree-ERG' vs. *yuk* 'tree.ABS', *nhan*-**i** 'sand-ERG' vs. *nhan* 'sand.ABS'
  - the ergative form is the original one, which underwent a process of vowel-final deletion when used for S and P arguments, due to the fact that lexical S and P arguments usually have reduced focal prominence (Gaby 2008).

On the nature of individual developmental processes

Are these various developmental processes driven by principles of optimization in the use of case marking, such as

- a tendency to use dedicated case marking only for arguments more in need of disambiguation
- a tendency to use the same case form for semantically or pragmatically similar arguments?

Not really: the various processes are directly explained by **inherent or contextual properties of the source construction**, independently of such principles.

On the nature of individual developmental processes

- **Reanalysis of argument structure**: the structure of the source construction invites inferences leading to the reanalysis, in particular, the construction involves two participants that are notional agents and patients, so that the NPs encoding those participants can be reinterpreted as A and P arguments respectively.
- **Grammaticalization**: metonymization processes triggered by the co-occurrence of particular forms and particular meanings, that is, some element is inferred to encode a meaning associated with its context of occurrence, for example, 'take' verbs, topic, and focus markers are inferred to encode the role of some argument they occur with in the sentence.
- **Phonological reduction**: the reduction process is triggered by discourse properties of the source elements, such as high discourse frequency (for pronominal A and S arguments) or reduced focal prominence (for nominal S and P arguments).

On the synchronic properties of case marking alignment

Now, if these various developmental processes are not triggered by principles of optimization in the use of case marking, what explains the synchronic properties of the resulting patterns that comply with these principles, namely

- the fact that particular arguments have a dedicated case form
- the fact that different arguments are encoded in the same way?

These properties too are a result of the origins of individual patterns, rather than general principles of optimization in the use of case marking.

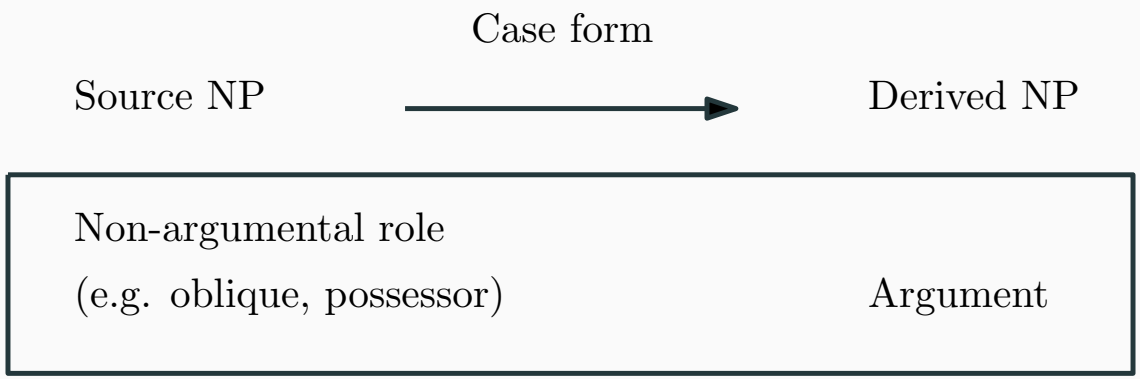
Inheritance

Inheritance: The use of some case form for particular argument continues the distribution of the elements or the developmental processes that give rise to that form, independently of principles of optimization in the use of case marking.

Inheritance

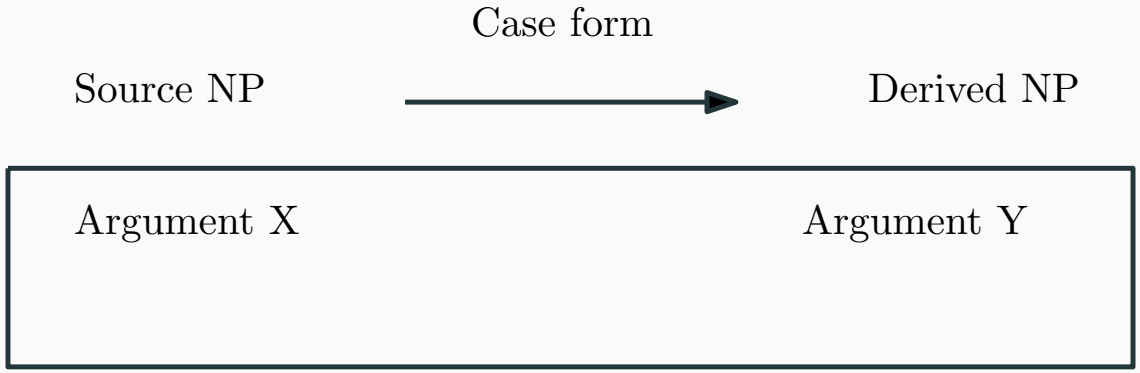
Inheritance in reanalysis of argument structure:

- The case forms used for the source NPs are retained within these NPs as they are reanalysed.
- Some of the source NPs are not arguments (e.g. oblique or possessor NPs). In such cases, the process leads to the relevant case forms being used for one argument only, the one resulting from the reanalysis.



Inheritance

- Other source NPs are themselves arguments (e.g. an S argument evolves into an A or a P argument).
- In this case, the relevant case forms continue to be used for the source argument, in addition to being used for the derived argument.



Inheritance

Thus, individual case forms retain their original distribution, and whether they are used for one argument only or for multiple arguments is

- a side effect of whether or not the source NP is itself an argument
- not an effect of the relative need to disambiguate particular arguments or similarities between different arguments.

Inheritance

Inheritance in grammaticalization:

- Some source element grammaticalizes into a case marker for a co-occurring arguments, and the distribution of the case marker continues the distribution of the source element.
- For example, markers for P arguments originate from elements that occur in combination with these arguments, ('take' verbs, topic or focus markers).
- Markers used with both A and S arguments originate from elements used to topicalize or focalize both of these arguments.
- So whether individual markers are used for one argument only or for multiple arguments depends on the distribution of the source element.
- But this distribution cannot depend on principles pertaining to the use of case marking for particular arguments, because the source element is not a case marker.

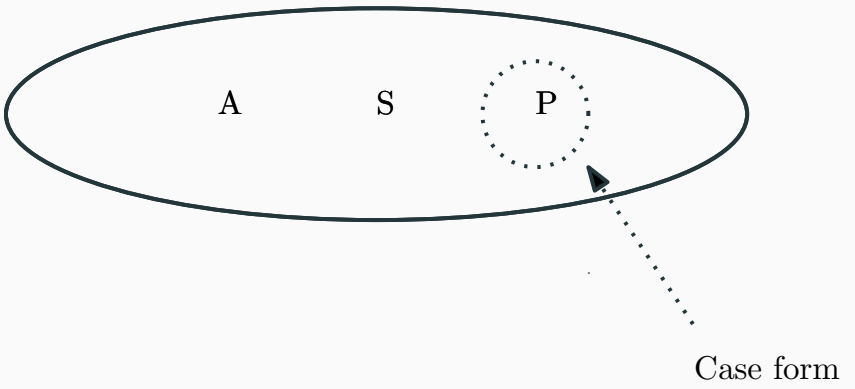
Inheritance

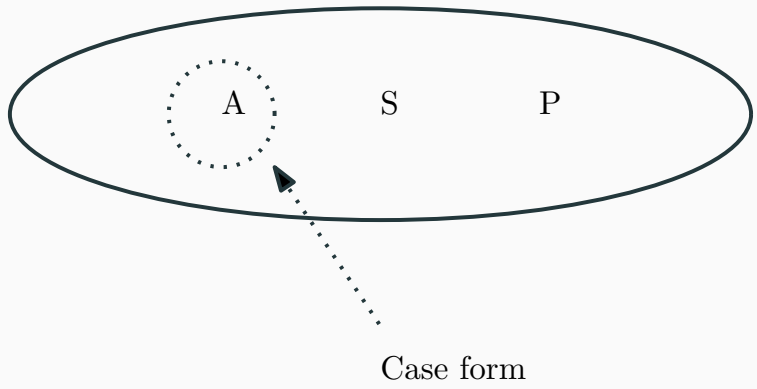
Inheritance in phonological reduction:

- The distribution of case forms resulting from phonological reduction continues that of the relevant phonological processes.
- Forms used for pronominal A and S arguments or for nominal S and P arguments originate from processes that apply to both of the relevant arguments.
- But phonological reduction applies to particular arguments because of properties of those arguments unrelated to principles of optimization in the use of case marking, such as high discourse frequency or reduced focal prominence.

Residue

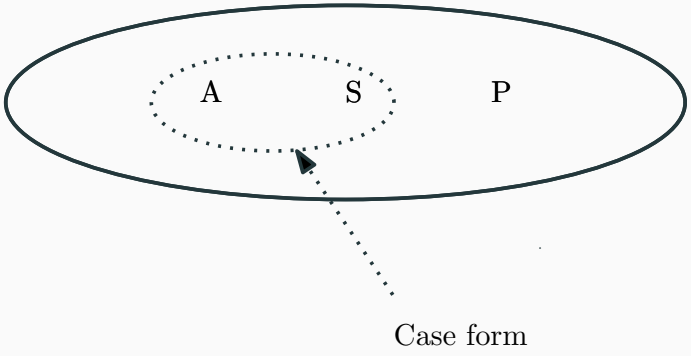
Residue: some case form is initially used for all arguments and became restricted to some of these arguments as a side effect of the development of new forms for other arguments.

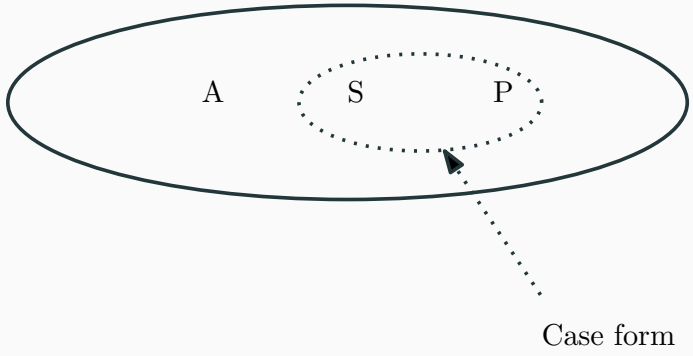




Residue

- In other cases, the new form applies to multiple arguments (topic markers evolving into markers for A and S arguments, phonological reduction targeting either A and S or S and P arguments).
- In such cases, the original form becomes restricted to the remaining argument (e.g. P or A), leading to dedicated case marking for that argument.





Residue

So whether some case form applies to one argument only or to multiple arguments is

- a side effect of various developmental processes that give rise to case forms for other arguments.
- not an effect of the relative need to disambiguate particular arguments or similarities between different arguments.

Cross-linguistic frequency

Thus

- Neither the developmental processes that give rise to individual aligment patterns nor the synchronic properties of these patterns actually appear to originate from principles of optimization in the use of case marking.
- Then why is it that particular alignment patterns are significantly more frequent than others cross-linguistically?
- In theory, this could still be regarded as evidence for principles of optimization in the use of case marking that favor patterns that comply with those principles, irrespective of how such patterns come into being in individual languages (Grossmann and Schmidtke-Bode 2019, Haspelmath 2019).

Cross-linguistic frequency

Diachronically, however, the cross-linguistic frequency of different alignment patterns will be a possibly combined result of three different factors:

- the **relative frequency of particular source constructions**
- the **relative frequency of the developmental processes** whereby these constructions give rise to particular alignment patterns
- the **relative frequency of processes whereby these patterns are retained or lost** across different generations of speakers.

These factors need not be related to the assumed optimization principles.

- **Source constructions** are independent of the alignment patterns to which they may give rise, so their relative cross-linguistic frequency is unlikely to be determined by principles pertaining to those patterns.

Cross-linguistic frequency

- **Developmental processes** (reanalysis of argument structure, grammaticalization, phonological reduction) are motivated by properties of the source construction, so their relative cross-linguistic frequency is likely to depend on factors pertaining to such properties (e.g. the relative naturalness of particular context-induced inferences leading to reanalysis of argument structure or grammaticalization), rather than properties of the resulting alignment patterns.
- **The retention and loss** of individual alignment patterns are much less investigated than their development, but they are independent of the diachronic origins of the pattern, so it is possible that they are related to synchronic properties of the pattern, such as whether the pattern complies with particular principles of optimization in the use of case marking.

Functional-typological explanations in diachrony

- The role of these three factors has not really been investigated so far, so there is no evidence about which one of them is actually responsible for the attested differences in the cross-linguistic frequency of different alignment patterns
- Ultimately, however, such differences cannot be taken as evidence for optimization principles that favor particular patterns over others, as they may be a (possibly combined) result of several distinct factors, which need not be related to such principles.

Functional-typological explanations in diachrony

Alienability splits in the use of overt and zero possessive marking(Cristofaro 2023): cross-linguistically,

- **overt marking can be restricted to alienable possession** (e.g. 'John's house', 'John's books')
- **zero marking can be restricted to inalienable possession** (e.g. 'John's mother', 'John's hand', 'the branch of the tree').

(27) Manam (Oceanic)

(a) *tanépwa* *úma* **ʔaná**-*na-lo*
chief garden POSS-BF-in
'in the chief's garden' (Lichtenberk 1983: 311)

(b) *táma-di*
father-3PL.ADN
'their father' (Lichtenberk 1983: 310)

Functional-typological explanations in diachrony

(28) Imonda (Border)

*ka-***na**	*aia-l-***na**	*ièf*
1-POSS	father-NOMLZ-POSS	house

'the house of my father' (Seiler 1985: 63)

Languages, however, do not usually display patterns where

- overt marking is restricted to inalienable possession
- zero marking is restricted to alienable possession

Functional-typological explanations in diachrony

Iconicity (Haiman 1983, 1985): ,

- Relations of inalienable possession are determined by inherent properties of the possessee, and hence involve higher conceptual contiguity between possessor and possessee than relations of alienable possession.
- This will be iconically reflected by the relative linear distance between possessor and possessee in the constructions used to encode these two relation types, as well as by the relative degree of morhosyntactic complexity of these constructions.
- The use of overt marking will be avoided in inalienable possession constructions, both because overt markers are often placed between possessor and possessee, thus increasing the linear distance between the two, and because they increase the morphosyntactic bulk of the construction, even when they are not placed between possessor and possessee.

Functional-typological explanations in diachrony

Economy (Nichols 1988; Koptjevskaja-Tamm 1996, Dahl and KoptjevskajaTamm 1998, 2001; Haspelmath 2008, 2017)

- The semantics of inalienable nouns implies that their referents are in a specific relationship with some other referent, so this relationship does not need to be overtly specified, and can be zero marked.
- By contrast, the referents of alienable nouns need not be involved in a relation with other referents, so this relation is more difficult to identify and hence more in need to be specified through overt marking.

Functional-typological explanations in diachrony

These explanations imply that the distribution of overt and zero marking across alienable and inalienable possession is **efficient**:

- This distribution leads to a match between syntactic structure and conceptual structure, and this match is presumably advantageous for speakers (for example in terms of processing, see e.g. Givón 1985)
- Alternatively, overt marking is used when it is needed for disambiguation, and it is not used when it is not needed for disambiguation.

Functional-typological explanations in diachrony

But how exactly could efficiency shape the cross-linguistic distribution of alienability splits?

- This could be at **developmental level**: particular alienability splits arise because they are efficient, whereas inefficient splits fail to arise.
- Alternatively, efficiency could play a role in the **retention or loss** of individual splits once they are in place in the language: efficient splits are generally retained cross-linguistically, whereas inefficient ones are lost.

Functional-typological explanations in diachrony

The development of 'efficient' alienability splits (overt marking restricted to alienable possession, or zero marking restricted to inalienable possession):

- The available diacronic evidence shows that these splits recurrently arise as possessive markers develop in alienable possession contexts, so that zero marking is replaced by overt marking in these contexts but not in inalienable possession ones.
- Over time, the relevant markers are either not extended or only partially extended to inalienable possession contexts, so that at least some of these contexts retain zero marking.

Functional-typological explanations in diachrony

Sometimes, the relevant possessive markers develop from demonstratives in constructions of the type 'X **that/this** Y', where X and Y are a possessee and a possessor respectively ('the X (of) Y'):

- a demonstrative element is used in the construction either to single out the possessee ('that X (of) Y') or to denote it in an appositive expression ('X, that (of) Y');
- this element is reinterpreted as a possessive marker, 'the X **of** Y'.

Functional-typological explanations in diachrony

(29) Kanakuru (West Chadic)

(a) *ɓili* **ma** *lowoi*
horn POSS.M.SG boy
the boy's horn' (cf. **me** 'this': Schuh 1983: 183-4)

(b) *ɓil* *kimne;* *mɔ* *Miyim;*
horn buffalo wife Miyim
'buffalo's horn; Miyim's wife' (Schuh 1983: 183-4)

(30) Gashua Bade (West Chadic)

(a) *ákú-***tk***-îi*
goat-POSS.F.SG-2SG
'your goat' (cf. **-tkú** 'this': Schuh 1977: 42)

(b) *bâ-anái*
co-wife-1SG
'my co-wife' (Schuh 1977: 42)

Functional-typological explanations in diachrony

(31) Ancient Egyptian (Afro-Asiatic)

(a) **nзy**=*sn* *ḥkз-w*
POSS=3PL sorcerer-M.PL

'their sorcerers' (possessive marker derived from demonstrative: Gardiner 2017: 645)

(b) *sn*=*j*
brother=1SG

'my brother' (Gardiner 2017: 645)

Functional-typological explanations in diachrony

(32) Mandarin Chinese

(a) *xuéxiào* **de** *jiào*
school POSS teach
'school's teaching staff' (Li and Thompson 1981: 114)

(b) *nǐ* *(de)* *mèimei*
2SG POSS younger.sister
'your younger sister' (Li and Thompson 1981: 116)

(c) **Di** *shi* *cang* *chun* *chu*
that be store spring place
'This is a warm and pleasant place.' (*Mo shan xi ci*, c. AD 900: Shi and Li 2002: 8)

Functional-typological explanations in diachrony

In other cases, the source of the possessive marker is a noun in an appositive relation with the possessee:

- the appositive noun specifies some semantic property of the possessee, e.g. 'X, **food/ drink/ tree/ thing/ property** Y', where X and Y are a possessee and a possessor respectively ('X the food/ thing ... (of) Y'):
- such nouns are reinterpreted as possessive markers, 'the X **of** Y'

The diachronic origins of markers involved in alienability splits

(33) Mussau (Oceanic)

(a) **ropi**-*qi* *niu*
POSS.CLASS-1SG.POSS coconut
'my coconut for drinking' (cf. *ropi* drink': Ross 2001: 157)

(b) **uma**-*qi* *uri* *eteba*
POSS.CLASS-1SG banana SG
'my banana plant' (cf. *uma* 'soil' from Proto-Oceanic * *quma* 'garden': Ross 2001: 157)

(c) **ane**-*qi* *uri* *eteba*
POSS.CLASS-1SG banana SG
'my banana to eat' (cf. *ane* 'food': Ross 2001: 157)

(d) **ai**-*qi* *ai*
POSS.CLASS-1SG tree
'my (tall) tree' (possessive classifier derived from the possessed noun, literally 'my tree, the tree': Ross 2001: 157)

(e) *tama-qi*
father-1SG
'my father' (Ross 2001: 156)

The diachronic origins of markers involved in alienability splits

(34) Iaai (Oceanic)

(a) **aɲi**-*n* *jəə*
POSS.CLASS-3SG bone

'its bone' (dog playing with a bone, possessive classifier derived from a noun meaning 'thing': Ozanne-Rivierre 1976: 159)

(b) *jeie-n*
bone-3SG

'its bone' (anatomical: Ozanne-Rivierre 1976: 159)

Functional-typological explanations in diachrony

(35) Cèmuhî (Oceanic)

(a) *ā* *mwà* **tɛ**-*n*
the house POSS.CLASS-his

'his house' (cf. *tɛ* 'property, goods': Moyse-Faurie and Ozanne-Rivierre 1983: 119)

(b) *pūnī-n*
head-his

'his head' (Moyse-Faurie and Ozanne-Rivierre 1983: 118)

The evelopment of alienability splits

(36) Newari (Tibeto-Burman)

(a) *ram-ya-**gu*** *tasbir*
Ram-GEN-NOMLZ picture

'Ram's picture' ('a picture belonging to Ram: originally, presumably 'Ram's thing, a picture': DeLancey 1986: 6-7)

(b) *ram-ya* *tasbir*
Ram-GEN picture

'A picture of Ram' (DeLancey 1986: 6-7)

The development alienability splits

In yet other cases, the possessive marker is derived from an indefinite form:

- In some languages, particular referents can be alienably or inalienably possessed, and overt marking is used in the former case but not in the latter.
- The possessive marker is derived from an indefinite form that encodes the (unspecified) source of the possessed item ('X (from) **something** (of) Y' > 'the X **of** Y').

Functional-typological explanations in diachrony

(37) Navajo (Na-Dene)

(a) *she-***'a**-*be*
1SG-3INDEF-milk
'my milk (from a secondary source, as milk purchased at the store)' (Young and Morgan 1980: 7)

(b) **'a**-*be*
3INDEF-milk
'something's milk' (Young and Morgan 1980: 7)

(c) *shi-be*
1SG-milk
'my milk (from my own breasts)' (Young and Morgan 1980: 28)

Functional-typological explanations in diachrony

The possessive marker is also often derived from an element that encodes a relation between two entities, but not one of possession:

- The element in question develops a possessive meaning as a result of context-driven inferences.
- For example, locative construction such as 'the X **at** Y', 'the X **at the place/ home** Y' can be reinterpreted as possessive ones.
- As a result, the locative element becomes a possessive marker, 'the X **of** Y'.

Functional-typological explanations in diachrony

(38) Acholi (Nilo-Saharan)

(a) *wiìc* **pā** *làtéèn*
head POSS child

'the head of the child' (e.g. a sheep's head belonging to the child, cf . *pā* 'house': Crazzolara 1955: 47, Claudi and Heine1989: 5)

(b) *wiìc* *làtéèn*
head child

'the child's (own) head' (Crazzolara 1955: 47, Claudi and Heine1989: 5)

Functional-typological explanations in diachrony

(39) Ngiti (Nilo-Saharan)

(a) *àba* **bhà** *ɨdzalí-nga*
father POSS courtyard-NOMLZ

'my father's courtyard' (cf. *ibhà* 'at home': Kutsch Lojenga1994: 154) 154)

(b) *ɔtsʉ́-du*
hand-1SG.INAL.POSS

'my hand' (Kutsch Lojenga 1994: 202)

Functional-typological explanations in diachrony

(40) Kabyie (Niger-Compo)

(a) *kólú* **tɛ́** *píya*
blacksmith POSS children

'the blacksmith's children (typically those living in his compound but not his own, cf. *tɛ́* 'home': Heine, Claudi and Hünnemeyer 1991: 148)

(b) *kólú* *píya*
blacksmith children

'the blacksmith's (own) children' (Heine, Claudi and Hünnemeyer 1991: 148)

Functional-typological explanations in diachrony

These various processes provide no evidence that the development of the relevant possessive markers is driven by efficiency:

- In some cases, an element not used to encode a relation between possessor and possessee takes on a possessive meaning originally associated with the construction as a whole;
- In other cases, a relation other than possession is reinterpreted as a possession relation as a result of context-driven inferences, so that the marker encoding that relation becomes a possessive marker.
- These are instances of **metonymization** (Traugott and Dasher 2005), a process of form-meaning recombination whereby some element takes on a meaning originally associated with its context of occurrence.

Functional-typological explanations in diachrony

- Metonymization has been shown to play a pivotal role in processes of constructional reiterpretation, particularly grammaticalization, and it is usually assumed to be triggered by the contextual co-occurrence of particular forms and particular meanings, not properties of the resulting grammatical patterns (Bybee, Perkins and Pagliuca 1994; Slobin 2002; Heine 2003; Traugott and Dasher 2005).
- To the extent that this is regarded as a viable analysis of the development of individual possessive markers,
  - particular source elements become possessive markers because they take on a possessive meaning associated with their contexts of occurrence, either inherently (when the source construction is a possessive one) or as a result of context-driven inferences;
  - there is no reason to assume that these markers arise because it is efficient for the language to have a possessive marker in the relevant possession contexts.

Functional-typological explanations in diachrony

The idea that alienability splits are motivated by efficiency is based on on two synchronic distributional facts:

- the synchronic distribution of overt and zero marking in particular alienability splits, namely the fact that overt marking is restricted to alienable possession, or zero marking is restricted to inalienable possession
- the synchronic distribution of these splits cross-linguistically, that is, the fact that they are significantly more frequent than splits where overt marking is restricted to inalienable possession, or zero marking is restricted to alienable possession.

But neither of these facts can actually be taken as evidence for the assumed efficiency principles.

Functional-typological explanations in diachrony

The distribution of individual markers across alienable and inalienable possession reflects the distribution of the source construction, not efficiency principles pertaining to the use of overt and zero marking for these two possession types:

- the source construction is not used in inalienable possession contexts, due to various types of incompatibilities with these contexts;
- these incompatibilities are unrelated to the expression of possession.

Functional-typological explanations in diachrony

- Constructions of the type 'that X of Y', 'X, that of Y' are not usually used with inalienable nouns (?? 'that mother of John', 'that arm of John', 'the mother, that of John', 'the arm, that of John'.
- A possible explanation for this is that these constructions are used to single out particular referents. Inalienable nouns such as kin terms and body parts, however, do not usually need to be singled out, in the case of kin terms because they are highly individuated, and in the case of body parts because they do not represent salient discourse referents (Koptjevskaja-Tamm 1996, Dahl and Koptjevskaja-Tamm 1998).

Functional-typological explanations in diachrony

- Constructions that encode the source of the possessed item (‘my something’s milk’, e.g. ‘my cow’s milk’) are incompatible with inalienable possession contexts, because in these contexts there is no external source for the possessee (e.g. in ‘my milk (from my breast)’, the possessor is also the source of the milk).
- Appositive nouns such ‘thing, ‘food’, ‘drink’, ‘tree, ‘property’ and the like are all semantically incompatible with kin terms, body part terms, and other terms designating parts of a whole, as these terms do not display the relevant semantic properties.

Functional-typological explanations in diachrony

- Locative constructions of the type 'the X at Y', 'the X at Y('s) place/home', are incompatible with body parts, as these cannot be described as being located at the possessor's home.
- These constructions are in principle compatible with kin terms, e.g. 'the mother at John's place', but it is to be expected that they will usually not be used with these terms, both because kins are often not located at the possessor's place, and because location is immaterial to the characterization of kinship relations anyway.

Functional-typological explanations in diachrony

These incompatibilities provide a ready explanation for the fact that the relevant markers are not used in (some) inalienable possession contexts.

- Individual markers will initially be used in contexts compatible with the distribution of the source construction (**persistence**: Hopper and Traugott 2003).
- If some source construction is incompatible with inalienable possession contexts, it is to be expected that the resulting possessive markers will not be used in those contexts either, at least initially.

Functional-typological explanations in diachrony

These incompatibilities, however, originate from properties of inalienable possession contexts that are unrelated to the expression of possession, e.g.

- the fact that inalienable nouns do not usually need to be singled out in discourse
- the fact that there is no external source for the possessee
- a contrast between the semantics of inalienable nouns and that of various types of appositives.

This is independent of any efficiency principle pertaining to the expression of the possessive relation in inalienable possession contexts.

Functional-typological explanations in diachrony

The relevant markers are also used in some inalienable possession contexts, which is usually assumed to be a result of extension:

- Extension may be related to several different properties of the relevant contexts, which explains why the the distribution of individual markers across such contexts often varies in a seemingly arbitrary fashion cross-linguistically.
- Ultimately, however, the fact that the relevant markers are not used in particular inalienable possession contexts will ultimately be a reflection of the fact that the source construction was not used in those contexts, for reasons independent of inalienable possession in itself.

Functional-typological explanations in diachrony

Some further distributional facts also support the idea that alienability split are a result of the properties of particular source constructions, rather than general efficiency principles pertaining to alienability.

- In several languages, the same possession type (either alienable or inalienable) may or may not be overtly marked depending on **semantic factors that cut across alienability distinctions**. Some cases of inalienable possession are overtly marked while some cases of alienable possession are not.

Functional-typological explanations in diachrony

- If use of overt marking depends on efficiency principles pertaing to the expression of alienable and inalienable possession in general, one would expect all cases of alienable or inalienable possession to be marked in the same way.
- If there are general efficiency-based preferences for the use of overt marking for alienable, as opposed to inalienable possession, one would expect that if overt marking is used for inalienable possession at all, it should be used for all cases of alienable possession.
- But these patterns are explained by the distribution of the source element that gives rise to the relevant possessive markers.

Functional-typological explanations in diachrony

(41) Old French

(a) *ele* *vint* *au* *mur* **du** *castel*
she came to.the wall of.the castle
'She came to the wall of the castle' (Aucassin et Nicolette XVI; Palm1977) [possessive marker used for inanimate possessors, irrespective of alienability]

(b) *les* *os* *Eumon* *et* *Agolant*
the bones Eumon and Agolant
'The bones of Eumon and Agolant' (La chanson d'Aspremont, 4391; Palm 1977) [inalienable, animate possessor, zero marking]

(c) *la* *maison* *l'* *emperor*
the house the emperor
'The house of the emperor' (Le roman de la rose, 1038; Palm 1977) [alienable, inanimate possessor, zero marking]

This distribution is consistent with the etymology of the possessive marker, as *de* originally encoded motion away from some point of origin ('from', 'away from', 'out of': , among others), and points of origin are usually inanimate entities.

(42) Mandinka (Niger-Congo)

(a) *à* **la** *jòŋo*
3 POSS slave
'his slave' (Creissels 2001: 446)

(b) *à* *màario*
3 master
'his master'

Functional-typological explanations in diachrony

(43) (c) *à* **la** *mùsoo*
3 POSS wife
'his wife' (Creissels 2001: 446)

(d) *à* *kèe*
3 husband
'her husband' (Creissels 2001: 446)

(e) *à* **la** *kàrandiŋo*
3 POSS pupil
'his pupil' (Creissels 2001: 446)

(f) *à* *kàrammoo*
3 teacher
'his teacher' (Creissels 2001: 446)

This pattern is explained by the fact that the possessive postposition was originally a locative postposition (ultimately derived from a non meaning 'mouth', 'opening', 'edge'). The postposition is used for possessees that can be described as being located at the possessor's place (Gregoire 1984, Creissels 2001).

Functional-typological explanations in diachrony

(44) Ngiyambaa (Australian)

(a) *bura:y-**gu*** *ba:ba:*
child-DAT father
'child's father' (Donaldson 1980: 230)

(b) *ŋadhu* *giyanhddha-nha* *ŋidji-la:* *winar-**gu**-dhi*
I fear-PRES this.CIRC-EST woman-DAT-CIRC
miri-dji
dog-CIRC
'I am frightened of this woman's dog' (Donaldson 1980: 107)

(c) *ŋani-la:* *mayi* *waɽaŋun*
that-EST person waɽaŋun
'that person's *waɽaŋun* (spirit)' (Donaldson 1980: 231)

This distribution is consistent with the dative origin of the possessive marker: in kinship relations, the possessee can be conceptualized as performing a specific function for the possessor, for example, being a parent, child, or sibling to someone, but this is not the case for part-whole relations ('mother/ brother to John', but not 'arm to John').

Functional-typological explanations in diachrony

- Some languages display patterns whereby the use of particular markers is restricted to inalienable possession contexts, whereas alienable possession is encoded by different markers.

(45) Faroese (Germanic)

(a) *mamma* **til** *Kjartan*
mum DAT Kjartan
'Kjartan's mum' (Stolz, Kettler, Stroh and Urdze 2008: 223)

(b) *eg* *havi* *[...]* *gamla* *gandastavin* **hjá** *Charlie*
I have:1SG old:ACC wand:DEF LOC Charlie
'I have got Charlie's old wand' (Stolz, Kettler, Stroh and Urdze 2008: 222-3)

Functional-typological explanations in diachrony

- One possible scenario for the emergence of these patterns is one in which there are distinct developmental processes that give rise to different markers for alienable and inalienable possession respectively.
- If there were general language preferences for the use of overt marking for alienable, rather than inalienable possession, one would expect new possessive markers to originate in alienable possession contexts and possibly be extended to inalienable possession ones, rather than originating in inalienable possession contexts.
- But these patterns too are explained by the distribution of the source element. In Faroese, the fact that the dative marker is restricted to kinship relations is consistent with the fact that, in these relations, the possessee can be conceptualized as performing a specific function for the possessor (see above). Thus it is to be expected that dative markers may be used for these relations even if they are not used for inalienable possession.

Functional-typological explanations in diachrony

If particular alienability splits (overt marking restricted to alienable possession, zero marking restricted to inalienable possession) do not arise because of efficiency, then why are these splits significantly more frequent than others (overt marking restricted to inalienable possession, zero marking restricted to alienable possession) cross-linguistically? This will be a (possibly combined) result of

- the frequency of those splits arising in particular languages
- the frequency of those splits being retained across different generations of speakers once they are in place in the language

Functional-typological explanations in diachrony

In general, alienability splits can arise

- as zero marking is replaced by overt marking in alienable, as opposed to inalienable possession contexts, or vice versa, either through the development of a new marker or through the extension of an existing one.

- as overt marking is replaced by zero marking in inalienable, as opposed to alienable possession contexts, or vice versa, as a result of the loss of an existing possessive marker.

Functional-typological explanations in diachrony

Existing alienability splits are retained or lost depending on whether overt and zero marking are retained in the relevant contexts.

- overt marking will be retained if existing markers are retained or replaced by new ones, and it will be lost if these markers are lost and fail to be replaced by new ones.

- zero marking will be retained or lost depending on whether or not possessive markers develop in or are extended to the relevant contexts.

Functional-typological explanations in diachrony

- Any differences in the cross-linguistic frequency of different alienability splits will then be a result of how frequently possessive markers develop or are lost in alienable and inalienable possession contexts, or are extended across these contexts.
- This phenomenon is logically independent of the properties of alienable and inalienable possession, and it should therefore be investigated in its own right.

Functional-typological explanations in diachrony

A possible diachronic scenario for the attested frequency differences between different alienability splits: **differential development**

- Possessive markers develop in alienable possession contexts more frequently than in inalienable possession ones.
- As a result, zero marking will be more frequently replaced by a new possessive marker in the former contexts than in the latter.
- But the fact that possessive markers defelop or fail to develop in alienable and inalienable possession contexts is ultimately a result of the distribution of the source construction across these contexts.

Functional-typological explanations in diachrony

- In this scenario, then, the frequency of possessive markers arising in alienable and inalienable possession context will be a result of
  - the frequency of multiple source constructions that can give rise to possessive markers and are restricted to alienable or inalienable possession contexts
  - the frequency of the developmental processes (metonymization) whereby these constructions actually give rise to possessive markers
- But the frequency of particular source constructions or developmental processes will plausibly depend on properties of those constructions and processes that need not be related to efficiency principles pertaining to alienability (especially when the source construction is not a possessive one).

Functional-typological explanations in diachrony

A second possible diachronic scenario: changes in the distribution of existing possessive markers (**differential extension**, **differential loss**):

- Existing markers are extended more frequently from inalienable to alienable possession contexts than vice versa.
- Existing markers are more frequently lost in inalienable possession contexts than in alienable possession ones.
- As a result,
  - zero marking is more frequently replaced by existing markers in alienable possession contexts than in inalienable possession ones
  - zero marking arises more frequently in inalienable possession contexts than in alienable possession ones.

Functional-typological explanations in diachrony

- While the development of new possessive markers is plausibly related to inherent or contextual properties of the source construction, it is possible that the extension, retention or loss of an existing marker are related to efficiency principles pertaining to the function of these markers (the expression of possession).
- Such principles, for example, could favor the extension of the marker to alienable possession contexts, or its loss in inalienable possession ones.
- This would be similar to natural selection in biological evolution: the distribution of genetic traits in a population is shaped by some preference for those traits (as determined by the trait's adaptiveness to the environment), independently of the processes that gave rise to the trait in the first place.
- This, however, should be examined based on actual processes of extension, retention and loss of possessive markers cross-linguistically.

Abbreviations

ADN	adnominal	DEM	demonstrative
ANAPH	anaphora	DEP.FUT	dependent future
BF	buffer	DIST	distal
C	common	DISTR	distributive
CIRC	circumstantive	ERG	ergative
CL	classifier	EST	established reference
CL1	classifier 1	F	feminine
CL2	classifier2	FOC	focus
COLL	collective	GEN	genitive
CSTR	construct state	GL	goal
DAT	dative	HON	honorific
DEF	definite	IMPF	imperfective

Abbreviations

INAL	inalienable	PERF	perfect
LK	linker	PFV	perfective
LOC	locative	PL	plural
M	masculine	POSS	possessive
NOM	nominative	S	subject index
NOMLZ	nominalizer	SG	singular
NONPL	non-plural	SRC	source
OBJ	object	SUBJ	subjunctive

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