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Does economy (or efficiency) explain grammatical change?

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1. Overview: Efficiency probably does not explain change

• the term "economy" has often been used in the sense of 'efficiency', i.e. a tradeoff between speaker (producer) efforts and hearer (comprehender) needs

• it has often been suggested that efficiency or "economy" explains aspects of language change (e.g. Jespersen 1941; Martinet 1955)

• in recent decades, something similar has been discussed also within generative grammar (e.g. Roberts & Roussou 1999; van Gelderen 2004)

– but there is no clear relationship between Chomskyan "economy of derivation" and cost-benefit tradeoffs

• here I suggest (or argue) that efficiency explanations (Gibson et al. 2019; Levshina 2023) are generally valid, but they explain system tendencies – not change

• unless it is caused by identifiable cultural factors (or maybe natural-environmental factors), language change may be very largely random

• efficiency of coding arises through a wide variety of diachronic changes, and languages opportunistically make use of different ways to achieve it

2. Some instances of efficient coding: frequency-based asymmetries

Grammatical coding is efficient primarily in two ways:

– element order tends to allow efficient processing of constituents (e.g. Hawkins 2014; Hahn & Xu 2022)

– asymmetric coding in grammar tends to be due to **frequency** and **predictability** asymmetries (e.g. Diessel 2019: Ch. 11; Haspelmath 2021)

• future tense marking

	English	Latin	Kiribati
PRS	*they praise*	*lauda-nt*	*e taetae* 'he speaks'
FUT	*they **will** praise*	*lauda-**b**-unt*	*e **na** taetae* 'he will speak'

• **plural (and dual) marking**

	Hebrew	Khanty
SG	*yom*	*xot*
PL	*yam-**im***	*xot-**ət***
DL	*yom-**ayim***	*xot-**ŋən***
	'day(s)'	'house(s)'

• **differential object marking** (cf. Witzlack-Makarevich & Seržant 2018)

	Spanish	Armenian
INANIMATE	*Ø la casa* 'house'	*mek* 'another one (inanimate)'
ANIMATE	***a** la mujer* 'woman'	*mek-**i*** 'another one (animate)'

• **differential possessive marking** (cf. Haspelmath 2017)

	Maltese		Jeli (Mande)	
INALIEN	*id-Ø-i*	'my hand'	*Soma Ø buloni*	'Soma's arms'
ALIEN	*il-ktieb **tiegħ**-i*	'my book'	*Soma **ra** monbilo*	'Soma's car'

• **causative and anticausative marking** (cf. Haspelmath 2016)

			French	Russian	Swahili
AUTOMATIC	NONCAUSAL	'boil (intr.)'	*bouillir*	*kipet'*	*cham-**k**-a*
	CAUSAL	'boil (tr.)'	***faire** bouillir*	*kipj**at**it'*	*cham-**sh**-a*
COSTLY	NONCAUSAL	'break (intr.)'	***se** casser*	*lomat'-**sja***	*vunj-**ik**-a*
	CAUSAL	'break (tr.)'	*casser*	*lomat'*	*vunj-a*

The asymmetric coding exhibits **functional adaptation**: it is beneficial to language users (coding with predictable information with less effort is efficient), and it results from an earlier evolutionary process (diachronic change).

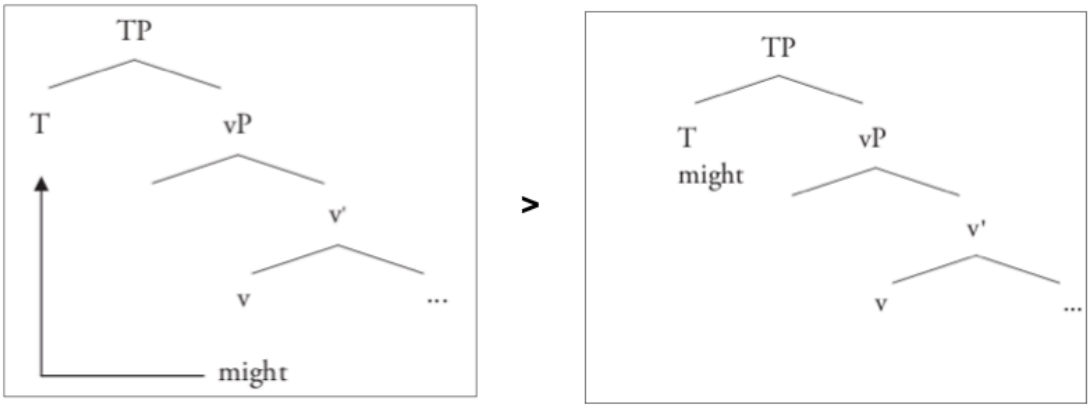
3. Economy (or efficiency) as explaining change

– Do cost-benefit tradeoffs (often known under the label of *communicative efficiency*, Levshina 2023) have a central role in explaining language change?

– Since von der Gabelentz (1891) and Jespersen (1894), linguists have often made claims along these lines (e.g. Langacker 1977; Lüdtke 1980; Keller 1994).

– But these ideas have generally remained speculative and have been supported by individual cherry-picked examples, not by systematic cross-linguistic evidence.

– The term "economy" has also been used in the sense of "system economy", a principle that favours **minimization of elements of the system** rather than a tradeoff between costs and benefits in actual communication (e.g. Roberts & Roussou 1999; van Gelderen 2004).



(van Gelderen 2011: 14: "Late Merge Principle";
similarly Roberts 1993: 228)

But there is no clear relationship between system economy and communicative efficiency!

– more derivational steps need not require greater speaker effort;
– fewer features or categories or contrasts may actually make communication more difficult
– the reasons to assume movement of full verbs are largely theory-internal
– quite generally, proposals for abstract systems come with a very high degree of uncertainty, in contrast with proposals about producer effort (measurable by expression length)

And as emphasized by Lightfoot (1999), change in **language use** must always **precede system change**, so that system considerations cannot drive or explain language change.

(see Haspelmath 1999c for a critical review of Lightfoot's book)

The relationship between *use* and *system*, between *performance* and *competence*, is strangely absent in diachronic work such as van Gelderen 2011; 2013; there is also little or no discussion of *innovation* vs. *propagation*.

(Maybe this is because it is assumed without argument that the locus of language change is language acquisition? But this is far from established; see Croft 2000.)

That **communicative efficiency** shapes language structures to a substantial extent is now widely recognized – but is efficiency a driving factor?

4. Does the nature of change explain synchronic systems?

There is now general agreement that **language change** must play an important role in bringing about efficiently designed systems, as in biological evolution (e.g. Croft 2000; Haspelmath 1999b; 2008; Lupyan & Dale 2016).

But can the efficient language structure be explained on the basis of **the nature of the diachronic processes and pathways of change**?

This has been argued in recent years (e.g. Bybee 2006; Blevins 2006; Anderson 2016; Cristofaro 2019):

Bybee (2006): the true universals are diachronic universals, i.e. universal mechanisms of change

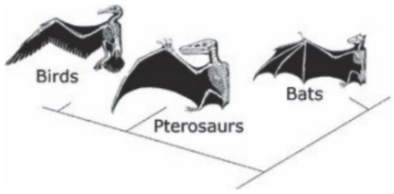
Cristofaro (2019): explanations should be **source-oriented**, not result-oriented – diachronic change has no "goal"

Here I suggest (or argue) that **the causal relationship is the reverse**:

– linguistic innovations are largely random (like biological mutations)
– propagation in language change is driven both by social factors (Croft 2000) and by functional factors (Haspelmath 1999b):

Language users unconsciously **prefer efficient variants in language use**, which results in overall efficient systems – so *pace* Cristofaro, change is often **result-oriented.**

The changes that lead to the resulting systems have very similar results, but **their starting points and trajectories can be very diverse**. This is similar to biological evolution, where we often see convergent evolution, e.g. wings in different taxa:



5. Multi-convergence from different sources

5.1. Future tense marking

(almost) no convergence: future tense markers arise via grammaticalization

English	***will*** *go*	< *will* 'want'
Spanish	*cantar-**á*** 'will sing'	< Latin *cantare habet* 'must sing'
Greek	***θa****-káni* 'will do'	< *θéli na káni* 'wants to do'
Eg. Arabic	***ħa****-yiktub* 'will write'	< *raayiħ yiktub* 'is going to write' (?)

but:	Modern Hebrew	*hu **yi**-xtov*	'he will write'	← old form!
		hu kotev	'he writes'	← innovated form!

5.2. Plural (and dual) marking

plural markers from group nouns:

Seychelles Creole ***bann*** *fanm* 'women' < *bande de femmes* 'group of women'

inherited plural markers extended:

Spanish	*muro-**s*** 'walls'	< Latin *mur-a* 'walls'
Romanian	*hotel-**uri*** 'hotels'	(cf. Latin *temp-us, temp-ora*)
Polish	*oficer-**owie*** 'officers'	(cf. Russian *oficer-y*)

inherited plural markers surviving:

English *day*/*day-s* < Proto-Germanic **dag-z*/**dag-oz*

5.3. Differential object marking

Spanish *a*	<	Latin *ad* 'to'/dative
Russian *-a*	<	*-a* (genitive)
Afrikaans *vir*	<	Dutch *voor* 'for'
Batavia Creole *kung*	<	Portuguese *com* 'with'
Persian *-râ*	<	Old Persian *rādi* 'concerning'
Sri Lanka Malay *-yang*	<	Malay *yang* (relative marker)
German *-n*	<	stem-forming element (Haspelmath 2002: §12.1.5)

In German, differential marking arose by **abandoning the distinction** in inanimates:

medieval German	NOM	*affe*	'ape'	*knote*	'knot'
	ACC	*affe-n*		*knote-n*	
Modern German	NOM	*Affe*		*Knoten*	
	ACC	*Affe-n*		*Knoten*	

5.4. Differential possessive marking: alienable vs. inalienable (cf. Haspelmath 2017)

A. Differential reduction

Old Italian < Latin (Rohlfs 1949-1954)

a. *moglia-ma* < *mulier mea* 'my wife' (inalienable)
fratel-to < *fratellus tuus* 'your brother' (inalienable)

b. *terra mia* < *terra mea* 'my land' (alienable)

Nyulnyul (Nyulnyulan; northern Australia; McGregor 1996: 252, 258)

a. *nga-lirr* (< *ngay lirr*)
1SG-mouth 1 mouth
'my mouth' (inalienable)

b. *jan* *yil*
I.OBL dog
'my dog' (alienable)

Lancashire English (Hollmann & Siewierska 2007: 407)
a. *m*[I] *brother* (inalienable)
b. *m*[aI] *football shoes* (alienable)

B. Differential expansion of a new construction

Arabic:

yad	'hand'	*yad-ii*	[hand-1SG.POSS]	'my hand'
kitaab	'book'	*kitaab-ii*	[book-1SG.POSS]	'my book'
etc.				

Maltese:

id	'hand'	*id-i*	[hand-1SG.POSS]	'my hand'
ktieb	'book'	**ktieb-i*	[book-1SG.POSS]	
		il-ktieb ***tiegħ****-i*	[ART-book of-1SG]	'my book'

5.5. Causative and anticausative marking (cf. Haspelmath 2016)

causative markers from full verbs:

Avar *t'eha-**zabi*** [blossom-CAUS] < *t'eha-ze habi* [blossom-INF make]

causative markers by analogical extension:

Hindi *nigal-**vaa**-naa* [swallow-CAUS-INF] < Sanskrit *-apaya* (extended from *-aya*)

anticausative marker from pronoun:

Russian *lomat'-**sja*** [break-ANTC] < *lomat'* 'break' + *sja*/*sebja* 'self'

anticausative marker by analogical extension:

Armenian *tsatsan-**v**-um e* [inflate-ANTC-CVB is] < Old Armenian *-u*/*-ui* (stem suffix)

(see Haspelmath 1987: 41)

6. Interim conclusion

Establishing causality in language change is generally very difficult (if possible at all), so the main question is which scenarios are the most plausible.

The main point here:

If synchronic grammatical systems exhibit a demonstrable **tendency toward asymmetric coding**, but if the sources and pathways of change are **diverse** and exhibit **convergence on a uniform target**, then the resulting efficient pattern cannot be the initial cause of the change:

– The changes are **result-oriented**, not source-based.
– It is only the functional result that we can understand, not the change as such.

7. On grammaticalization and cyclic change

7.1. What is the role of grammaticalization?

In quite a few of the asymmetric-coding cases that we saw, the marker arose by grammaticalization, e.g.

Spanish *cantar-**á*** 'will sing' < Latin *cantare habet* 'must sing'
Seychelles Creole ***bann*** *fanm* 'women' < *bande de femmes* 'group of women'
Maltese *il-ktieb **tiegħ**-l* 'my book' < Arabic *al-kitaab mataaʕ-ii* 'the book my thing'
Arabic Avar *t'eha-**zabi*** 'make blossom' < *t'eha-ze habi* [blossom-INF make]

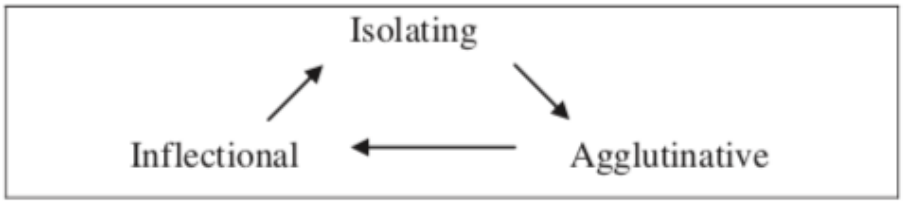
But can we say that grammaticalization explains any synchronic patterns? No, because the notion of "grammaticalization" itself throws no light on why only markers of future tense, plural number, alienable possession and causative arise via grammaticalization, but not the opposite.

Pace Bybee (2006), grammaticalization does not lead to a consistent set of synchronic outcomes, so it does not help us understand synchronic regularities.

7.2. Can we understand grammaticalization?

Maybe via the notion of *extravagance* (Haspelmath 1999a), or "inflationary process" (Dahl 2001). Probably not via any notion of "economy" or "efficiency".

7.3. What about the classical cycles?



(van Gelderen 2013: 236)

In Haspelmath (2018), I examined the evidence for such a cycle and concluded:

> "It thus appears that the idea of an agglutination–fusion–isolation cycle is a remnant of the 19th century, when it was widely assumed that flective languages were a higher, more advanced development from the more primitive, less perfect agglutinative languages. It is time to abandon that view…"

I do, however, find reason to think that a "synthesis-analysis" spiral (the *anasynthetic spiral*), because older synthetic forms are often replaced by new analytic forms, which in turn may become a new layer of synthetic forms.

This is a consequence of the unidirectionality of grammaticalization, but it does not seem to be related to economy or efficiency.

8. Super-short summary

Communicative efficiency explains the synchronic patterns of asymmetric coding, which are implemented diachronically in diverse ways (Haspelmath 2021).

Extravagance may explain the tendency for unidirectionality of grammaticalization (Haspelmath 1999a).

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