Dispreferred structures through language change: the diachrony of affix ordering
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1. The question and the main claims
1.1 The big picture
Q: Why are cross-linguistically dispreferred structures attested? In other words, what can explain cross-linguistic rarity?
A: Basically, **historical contingency**: rare structures are rare because they presuppose either (a) rare structures as input for change, (b) rare series of normal types of change, (c) rare changes *per se*, or (d) a combination of the above.

The main advantage of this type of explanation: it allows for rare – and not just unattested – language structures.

1.2 The smaller picture
- Given a worldwide preference for suffixes over prefixes, why do some languages nonetheless have a macro-preference for prefixes?
- Specifically, we show that Ancient Egyptian-Coptic (Afroasiatic) shows a long-term diachronic macro-change from mixed suffixing-prefixing to an overwhelming preference for prefixing.
- We argue that each of the micro-changes implicated in this macro-change are better understood in terms of regular changes at the level of individual constructions, via, e.g., grammaticalization, rather than in terms of a broad Sapirian 'drift.'
- Crucially, it is the particular constellation of structural features of the language at a particular moment in time, together with regular mechanisms of language change, that give rise to the cross-linguistically unusual 'macro-preference' of the language.

2. The worldwide 'suffixing preference'
2.1 The observation
It has been repeatedly observed that there is a worldwide preference for suffixes as opposed to prefixes in the languages of the world (e.g., Sapir 1921, Greenberg 1957, Bybee et al. 1990, Hall 1998, Hawkins & Cutler 1988, Cysouw 2009, Himmelmann 2014).
Grammatical morphemes have a significant tendency (a) to follow the verb and (b) to be bound, i.e., suffixes.

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	PREPOSED	POSTPOSED	TOTAL
AFFIXES	426	1236	1662
FUNCTION WORDS	386	316	702
TOTAL	812	1552	2364

Table 1: The suffixing preference in verbal grammatical elements from 71 languages
(Himmelmann 2014, from the database of Bybee et al. 1990: 5)

- Suffixes are about 3 times more numerous than prefixes in this sample.
- Postposed grammatical elements are about twice as numerous as preposed grammatical elements in this sample (= the POSTPOSING PREFERENCE).
- Postposed grammatical item are typically affixes, while preposed grammatical elements are equally likely to be affixes or function words (= the SUFFIXING PREFERENCE, in the narrow sense) (Himmelmann 2014: 928).

2.2 Basic word order and the suffixing preference

The POSTPOSING TENDENCY is partially due to the fact that verb-final (OV) languages are heavily and consistently postposing:

	OV		VO		TOTAL
	PREPOSED	POSTPOSED	PREPOSED	POSTPOSED	
AFFIXES	158	813	268	423	1662
FUNCTION WORDS	75	205	311	111	702
TOTAL	233	1018	579	534	2364

Table 2: pre- and postposed grammatical elements in OV vs VO languages
(Himmelmann 2014: 928, data from Bybee et al. 1990: 6)

- Postposed grammatical elements in OV languages outnumber preposed ones by a ratio of about 4 to 1 (1018 to 233).
- In VO languages (verb initial and verb medial), the two positional types are almost equally frequent.
- But VO languages are not heavily preposing, so they also contribute to the general postposing tendency.
- As for the narrow SUFFIXING PREFERENCE, no major difference between OV and VO (roughly 80% of postposed grammatical elements are affixes).
- Verb-medial languages (SVO) disprefer the affixation of preposed grammatical elements.

Another look:

	OV	VO	NO DOM. ORDER	TOTAL
Little affixation	35 (25%)	100 (71.4%)	5 (3.6%)	140 (14.8%)
Strongly suffixing	269 (68.6%)	93 (23.7%)	30 (7.7%)	392 (41.5%)
Weakly suffixing	70 (57.9%)	44 (36.4%)	7 (5.8%)	121 (12.8%)
Equal prefixing and suffixing	49 (34.5%)	78 (54.9%)	15 (10.6%)	142 (15%)
Weakly prefixing	23 (25%	61 (66.3%)	8 (8.7%)	92 (9.7%)
Strongly prefixing	6 (10.3%)	52 (89.7%)	0	58 (6.1%)
Total	452 (47.8%)	428 (45.3%)	65 (6.9%)	945 (100%)

Table 3: Correlation between OV order and prefixing vs. suffixing inflectional morphology, based on WALS (Jacques 2013)

- More suffixing OV languages than VO languages (339 v. 137)
- Fewer prefixing OV languages than VO languages (29 v. 113)
- But: even with VO order, mainly prefixing languages are less common than suffixing ones (113 v. 137).

2.3 The suffixing preference across grammatical categories
The suffixing preference is not identical across categories.

	PREFIXING LANGUAGE	SUFFIXING LANGUAGE	TOTAL (LANGUAGES)
CASE MARKERS	38 (7.8%)	452 (92.2%)	490
TENSE-ASPECT	153 (18.6%)	668 (81.4%)	821
PLURAL	126 (19.7%)	513 (80.3%)	639

Table 4: Grammatical categories with strong suffixing preference (Himmelmann 2014: 929, based on Dryer's (2013) data)

- Case markers, tense-aspect markers, and plural markers show a pronounced preference for suffixes.
- However, the preference for suffixes is much less significant for person marking on the verb (Cysouw 2009, Siewierska & Bakker 1996).

2.2 Possible explanations
- A world-wide **retention from Proto-World**. Such an argument, to the best of our knowledge, has not been made, but it has been made for the worldwide preference for OV order (Gell-Mann & Ruhlen 2011).
- **Language contact**, but affix borrowing is probably not frequent enough to explain its impressive extent (Seifart 2015).
- Another possible explanation is that suffixes are preferred for some reason in some form of **Universal Grammar**, e.g., the 'Head Ordering Principle' (Cutler, Hawkins & Gilligan 1985).

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- **Processing** or some other hitherto unclear but domain-general cognitive mechanism (Cutler, Hawkins & Gillingan 1985, Caballero et al. 2008).
- **Language change**, e.g., grammaticalization (Givón 1971, Bybee 1985, Bybee et. al 1990), in turn due to online usage factors (Hall 1988, Himmelmann 2014).

CLINE OF INCREASING COALESCENCE IN GRAMMATICALIZATION PROCESSES
(Hopper & Traugott 2003, Himmelmann 2014)

lexeme > 'heavy' function word > clitic function word > affix > inflectional formative (> zero)

3. The present analysis: a typological-quantitative perspective
- Dryer's (2013) typological study of macro-preferences for affixing and suffixing vs. prefixing in a large sample.
- Based on 10 features or parameters.

	parameter
1	case affixes on nouns
2	pronominal subject affixes on verbs
3	tense-aspect affixes on verbs
4	plural affixes on nouns
5	pronominal possessive affixes on nouns
6	definite or indefinite affixes on nouns
7	pronominal object affixes on verbs
8	negative affixes on verb
9	interrogative affixes on verbs
10	adverbial subordinator affixes on verbs

Table 5: Types of inflexional affixes (Dryer 2013)

The calculation of the prefixing and suffixing indexes for a single language is done as follows:
- A language receives a single point for prefixing or suffixing if it is *predominantly* prefixing or suffixing for a given parameter, and half a point for each if it has both prefixing and suffixing, with *neither deemed dominant*.
- The first three affix types are considered to be especially important, so Dryer gives them double weight.

- As such, the highest score that a language could have for either prefixing or suffixing would be 13 (=3*2 + 7).

VALUE	DESCRIPTION	REPRESENTATION	PERCENTAGE
Little or no inflectional morphology	affixing index is 2 or less	141	14.55%
Predominantly suffixing	suffixing index which is more than 80% of its affixing index	406	41.90%
Moderate preference for suffixing	suffixing index is more than 60% of the affixing index but not more than 80%	123	12.69%
Approximately equal amounts of suffixing and prefixing	suffixing index that is greater than or equal to 40% of the affixing index and less than or equal to 60% of the affixing index	147	15.17%
Moderate preference for prefixing	prefixing index is more than 60% of the affixing index but not more than 80%	94	9.70%
Predominantly prefixing	prefixing index that is more than 80% of its affixing index	58	5.99%
TOTAL		969	100%

Table 6: Suffixing vs Prefixing in Inflectional Morphology (Dryer 2003)

4. A predominantly prefixing language: Coptic

4.1 An overview

First, we set out the criteria used in this paper to determine whether a given bound element is an affix or not. We stress that this does not mean that such bound elements 'are' affixes in any ontological sense; we simply want to make clear why we considered a given element to be an affix for the purposes of this paper.

- The first criterion is **adjacency**, i.e., if an element is invariably adjacent to a base.
- The second criterion is (non)**interruptability**, i.e., if no other element can occur between the element and a base.
- The third criterion is phonological, i.e., if the form of the element is **shorter** in some way than a corresponding free form, or if the form **has no corresponding**

free form. The latter criterion is considered especially good, since clitics often allow for alternative, non-clitic realizations, while affixes do not allow for realizations as independent phonological words (Himmelmann 2014: 931).

- The fourth is structural, i.e., if a host structurally requires the presence of an element in order to function as a grammatical unit.

	PARAMETER	PREFIXING OR SUFFIXING	SUFFIXING SCORE	PREFIXING SCORE
1	case affixes on nouns	exclusively prefixing	0	2
2	pronominal subject affixes on verbs	exclusively prefixing	0	2
3	tense-aspect affixes on verbs	exclusively prefixing	0	2
4	plural affixes on nouns	predominantly prefixing	0	1
5	pronominal possessive affixes on nouns	predominantly prefixing	0	1
6	definite or indefinite affixes on nouns	exclusively prefixing	0	1
7	pronominal object affixes on verbs	exclusively suffixing	1	0
8	negative affixes on verb	exclusively prefixing	0	1
9	interrogative affixes on verbs	exclusively prefixing	0	1
10	adverbial subordinator affixes on verbs	exclusively prefixing	0	1
	TOTAL		1	12
	AFFIXING INDEX		100%	
	Suffixing vs. prefixing strategies		7.7%	92.3%

Table 7: Calculation of the affixing index for Coptic
and of the suffixing vs. prefixing strategies

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- In terms of Dryer's (2013) typology, **Coptic has an unusually high prefixing preference**: **with its extremely high prefixing preference (12/13), Coptic belongs to the rare 6% or so of languages that are predominantly prefixing**.
- **Moreover, it has a higher prefixing index than any other language in Dryer's 969-language sample**. The closest competitor is Hunde (Bantu; Democratic Republic of Congo; Kahombo 1992), with a prefixing index of 9.5/13. Interestingly, Coptic was deemed to be 'weakly prefixing' in Dryer's study, but the present discussion shows that this needs to be revised.
- **Coptic is an areal outlier**. While predominantly prefixing languages are relatively common in Mesoamerica and in Africa, within Africa it is only in western and southern sub-Saharan Africa that predominant prefixing is common (Map 1). In northern Africa, Coptic is the only language that is predominantly prefixing, although some Berber languages are considered to be 'weakly prefixing' by Dryer.
- Coptic is also possibly a **genetic outlier**, although we haven't checked.
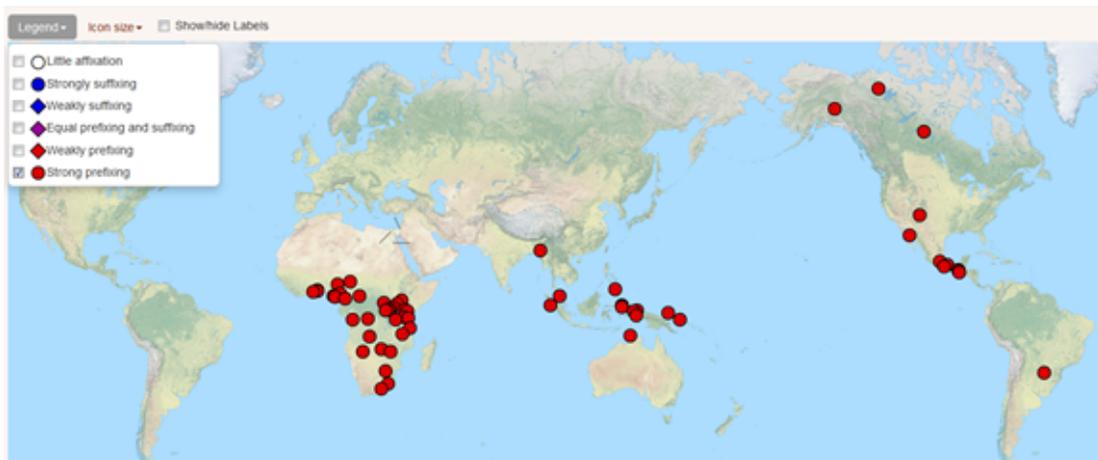
Map 1: Strongly suffixing languages in WALS

4.2 The specific parameters (P1-10)

P1: Case affixes on nouns

Coptic has prefixed case markers. The nominative case prefix occurs on postverbal noun phrases in S or A role, while the accusative case prefix occurs on postverbal noun phrases in P role (Grossman 2014). This is cross-linguistically unusual but areally typical (König 2008).

(1)   *a-s-ô*   ***nci**-elisabet*   *tef-shimi*
                 PST-3SGF-conceive   **NOM**-Elizabeth   his-woman
                 'His wife Elizabeth became pregnant' (Luke 1:24).

(2)   *a-s-ô*   ***n**-ou-šêre*
                 PST-3SGF-conceive   **ACC**-a-son
                 'She conceived a son' (Luke 1:36).

P2: Subject affixes on verbs

Coptic has prefixed subject affixes on verbs. While they may follow TAM/Polarity affixes, they always precede the lexical verb.

(3)   ***k**-na-mooše*
                 2SGM-FUT-walk
                 'You will walk' (Luke 1:76).

(4)   *etbe-ou*   ***tetn**-šine*   *nsô-i*
                 because-what   **2PL**-search   after-1SG
                 'Why are you looking for me?' (Luke 2:49).

(5)   *a-**f**-či*   *n-ou-oik*
                 PST-**3SGM**-take   ACC-INDEF-bread
                 'He took some bread' (Mark 6:5).

P3: Tense-aspect affixes on verbs

Coptic has prefixed tense-aspect affixes on verbs.

(6)   ***a**-f-sôtm*
                 PST-3SGM-hear
                 'He heard' (Mt 2:3)

(7)   *tetn-**na**-sôtm*
                 2PL-FUT-hear
                 'You will hear.' (Mt 24:6)

P4: Plural affixes on nouns

The productive strategy in Coptic for plural marking involves prefixed plural markers on nouns, with a marginal plural-suffixing construction.

(8)   *p-rôme*   DEF.MSG-man 'the man'   (Mt 4:4)

       n-rôme   DEF.PL-man   'the men'   (Mt 5:13)

(9)   *ou-rôme*   INDEF.SG-man 'a man'   (Mt. 7:26)

       hen-rôme INDEF.PL-man '(some) men'   (Acts 4:13)

Phonologically, the indefinites are /w/ and /hn/.

P5: Pronominal possessive affixes on nouns

The productive means of expressing pronominal possessors in Coptic is prefixed possessive prefixes on nouns, which code the number and gender of the possessee and the person of the possessor. See Egedi (2010) and Haspelmath (2014) for recent studies.

(10)   *p-a-eiôt*   POSS.MSG-**1SG**-father   'my father'   (Mt 7:21)

       pe-k-eiôt   POSS.MSG-**2SGM**-father   'your father'   (Mt 6:18)

       pe-f-eiôt   POSS.MSG-**3SG**-father   'his father'   (Mt 2:22)

       pe-n-eiôt   POSS.MSG-**1PL**-father   'our father'   (Mt 3:9)

       pe-tn-eiôt POSS.MSG-**2PL**-father   'your father'   (Mt 6:8)

       pe-u-eiôt   POSS.MSG-**3PL**-father   'their father'   (Mt 4:21)

Coptic also has a non-productive construction in which possessors are suffixed to the possessed noun; almost entirely body part nouns, and usually in non-lexical uses (e.g., in complex prepositional phrases).

(11)   *rnt-k*
       name-**2SGM**
       'Your name' (Mk 5:9)

However, even for these nouns, the possessive prefix is more common (Haspelmath 2014).

(12)   *pe-k-ran*
       POSS.MSG-**2SGM**-name
       'Your name' (Mt 7:22)

P6: Definite or indefinite affixes on nouns

Coptic has definite and indefinite prefixes on nouns.

(13)   ***p*-*ran***   ***n*-*ran***
        DEF.MSG-name   DEF.PL-name
        'the name'   'the names'
        (Mt 28:19)   (Apoc 21:14)

(14)   ***ou*-*ran***   ***hen*-*ran***
        INDEF.SG-name   INDEF.PL-name
        'a name'   '(some) names'
        (Apoc 3:1)   (Apoc 21:12)

P7: Pronominal object affixes on verbs

Coptic has pronominal object affixes on verbs.

(15)   *a-f-sepsôp-**t***   (Acts 23:18)
        PST-3SGM-comfort-**1SG**
        'He comforted me'

(16)   *a-s-sepsôp-**n***   (Acts16:15)
        PST-3FSG-comfort-**1PL**
        'She comforted us'

(17)   *a-f-sepsôp-**ou***   (Acts 3:3)
        PST-3SGM-comfort-**3PL**
        'He comforted them'

P8: negative affixes on verb

In verbal main clauses, Coptic has portmanteau prefixes that code both TAM values and polarity.

(18)   ***nne*-*k*-*hôtb***   (Mt 5:21)
        NEG.OPT-2SGM-kill
        'Thou shalt not kill.'

(19)   ***mpr*-*hôtb***   (Mk 10:19)
        PROH-kill
        'Don't kill.'

(20)   ***mp**-f-ti-eoou*   *m-pnoute*   (Acts 12:23)
         NEG.PST-3SGM-give-honor   ACC-God
         'He did not honor God.'

(21)   ***me**-f-ei*   (John 3:20)
         NEG.AOR-3SGM-come
         'He cannot come.'

(22)   ***mpat**-f-ei*   (John 7:6)
         NEG.PRF-3SGM-come
         'He hasn't come yet.'

In verbal subordinate clauses, Coptic has a dedicated negative prefix.

(23)   [And he smote him and his sons and all his people]
         *šant-f-**tm**-šečp-seepe*   *nta-f*   (Numbers 21:35)
         LIMIT-3SGM-NEG-leave-remainder   of-3SGM
         'until he did not leave any remainder of his'.

In some clause-types, Coptic also has a discontinuous negation, which comprises a negative prefix (*n-*) and a post-clitic (*=an*).

(24)   ***n**-g-na-šače=**an***   *laau*   (Mk 15:4)
         NEG1-2SGM-FUT-say=**NEG2**   thing
         'You won't say anything.'

However, the dominant strategy in Coptic is clearly prefixed negative markers.

P9: Interrogative affixes on verbs

Coptic has unmarked direct yes/no questions.

(25)   *k-nau*   *e-tei-shime*
         2SGM-see   ALL-DEM.FSG-woman
         'Do you see this woman?' (Luke 7:44)

A more complex issue is that of the relationship between focus morphology and interrogative constructions. Coptic has a series of prefixes that code the utterance as being characterized by a marked information structure. Typically, the function of this prefix is to mark the verb itself as backgrounded, and an adjunct as focus (Polotsky 1944, Layton 2004, Shisha-Halevy 1986, Haspelmath 2014).

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(26)   **e-k-čô**   na-n   n-tei-parabolê
         FOC-2SGM-say   DAT-1PL   ACC-DEM-parable
         'Are you telling this parable *for us*?'

However, this focus morphology is strongly associated with interrogative constructions (Polotsky 1944, Shisha-Halevy 1986, Reintges 2003), and it can occur even where no focal element is clearly present.

(27)   **e-k-nkotk**
         FOC-2SGM-sleep
         'Are you asleep?' (Mark 14:37)

P10: Adverbial subordinator affixes on verbs

Coptic has a set of verbal prefixes that indicate subordinate-clause status. The most general is the so-called 'circumstantial,' which is a general adverbial subordinator.

(28)   *a-u-ei*   ehrai e-pe-mhaou   **e-a-p-rê**   ša
         PST-3PL-come   DIR   ALL-DEF-tomb **ADVZ**-PST-DEF-sun rise
         'They went to the tomb *when the sun had risen*' (Mark 16:2, L 421)

Other verbal prefixes are more specific in function, such as the so-called Limitative ('until'):

(29)   **šant**-*n-hôtb*   *m-paulos*
         LIM-1PL-kill   ACC-Paul
         'until we kill Paul.' (Acts 23:12)

Since Coptic presents a cross-linguistically, areally, and (possibly) genetically atypical distribution of structures, we turn to the question: how did it get to be that way? In the following section (§5), we provide examples for each parameter from four distinct stages of the language, Earlier Egyptian, Late Egyptian, Demotic and Coptic, sometimes lumping Late Egyptian and Demotic together as 'Later Egyptian.'

STAGE	DATES (pretty roughly)
Earlier Egyptian	3000-1350 BCE
Late Egyptian	1350-700 BCE
Demotic	700 BCE – 450 CE
Coptic	400 CE – 1450 CE

Table 8: Stages of Egyptian-Coptic as discussed here

5. The diachrony of affixing and affix ordering in Ancient Egyptian-Coptic

Since it is important for diachronic typology to be able to make comparative statements based on clear criteria, we propose that for diachronic purposes, a modified form of Dryer's typology is useful. Rather than limiting the score to 0 for no affix, 1 for either suffixing or prefixing, and 0.5 for both prefixing and affixing, we suggest using two scales, both of which admit a more fine-grained analysis. For the present discussion, we will assume that they are in fact the same scale, but can be interpreted either synchronically or diachronically.

INDEX	SYNCHRONIC	DIACHRONIC
0	No affix	No affix
.25	Construction is prefixing or suffixing, but is of limited distribution in some way	(a) An older construction, which is recessive in some way (of limited frequency or productivity), or (b) An innovative construction, which is emerging and conventionalized to some extent, but is still limited in frequency or distribution in some way.
.5	More or less equally prefixing and suffixing	Both types of affix are more or less equally productive
.75	Construction is predominantly prefixing or suffixing, but another, more restricted construction-type in the same domain is attested with the other type.	(a) A newer construction that has come to dominate a particular domain in terms of frequency or productivity, or: (b) An older construction, which still dominates a particular domain, while another, newer construction is emerging and conventionalized to some extent.
1.0	Exclusively prefixing or suffixing	Exclusively prefixing or suffixing

Table 9: A finer-grained index for affixing

These scores can be doubled for the first three parameters, if one would like to be consistent with Dryer (2013). We realize that this is a very rough typology, but it nonetheless allows linguists interested in typologizing change a possibility of taking into account situations in which different construction types co-exist in a particular synchronic stage of the language

5.1   Case-marking

In Earlier Egyptian, there is no case marking on lexical noun phrases in S, A, or P roles (ex. 30-32, respectively).

(30) *rs*   *ȝs.t* *bkȝ-t(i)*   *ḥr*   *mtw-t*   *sn-s*   *Wsir*
      wake_up:PRF **Isis** make_pregnant-STAT.F under semen-F brother-3SG.F Osiris
      'Isis woke up pregnant with the seed of her brother Osiris' (*CT* II, 210a-b)

(31) *n*   *mȝ-n*   *s(j)*   ***ir-t***   ***nb***
      NEG.IPFV   see-IPFV 3SG.F   **eye-F**   **any**
      'No eye can see it' (*Hammamat* 191,6)

(32) *iw*   *wḏꜥ-n-i*   ***sbȝ-w***   ***is-w***
      PTCL   unlock-ANT-1SG   **door-PL**   **tomb-PL**
      'Now, I have unlocked the gates of the tombs' (*CT* II, 113b-c)

In Late Egyptian and Demotic, there is no case marking on lexical noun phrases in S, A, or P roles.

(33) *bn*   *mdw*   ***sri***   ***sri-t***   *n_im-f*
      NEG.SBJV talk:SBJV **son**   **daughter-F** among-3SG.M
      'No son or daughter shall talk about it (i.e., contest its ownership)' (*Naunakhte* IV,4-5)

(34) *ḏd*   *pȝy* *ḥȝty_ꜥ*   *n*   *niw-t*   *nhȝy n*   *md-w-t*
      say:PST **this   mayor**   of   **Thebes-F some** of   **charge-PL-F**
      'This mayor of Thebes made certain charges' (pAbb, 7,8-9)

(35) *ꜥl*   ***Stne***   *r*   *mr-t*   *r*   *tȝ*   *shr-t*   *pr-ꜥȝ*
      climb:PST **Setne**   ALL boat-F   ALL ART.F.SG   pleasure_boat-F   Pharaoh
      'Setne climbed on board of the pleasure boat of Pharaoh' (*Setne* 6/18)

(36) *ir*   ***rmṯ*** *mr*   *pȝy-f*   *iry*   *nim-n*
      PST   **man** love:INF   POSS-3SG.M   fellow   among-1PL
      'We made love to each other' (*Setne* 3/7)

In Coptic, there is both nominative (A/S) and accusative (P) marking on lexical noun phrases, but only post-verbally. Both begin to emerge some time before Coptic, at different times and at different rates. The Accusative marker begins to grammaticalize in Late Egyptian from a general locative preposition (ex. 37), while the Nominative marker develops from an 'afterthought' or antitopic marker, attested sporadically in Demotic but not fully grammaticalized until Coptic (ex. 38).

(37)   *sw*   *ir*   **m**   *pꜣy-f*   *sḥn*
       3SG.M   do:INF   **in** (= ACC)   POSS-3SG.M   assignment
       'He does his job' (*LRL* 32,13).

(38)   *hbḳ*   *nim-s*   ***nge**-ijḫ*
       waste_away   ACC-3SG.F   **NOM**-demon
       'Waste her away, you demon' (pMagLL 13,2)

	SUFFIXING	PREFIXING
Earlier Egyptian	0	0
Late Egyptian	0	0.25 (ACC) 0 (NOM)
Demotic	0	1 (ACC) 0.25 (NOM)
Coptic	0	1 (ACC+NOM)

Table 10: Case marking on lexical NPs

Type of change: grammaticalization

5.2   Subject person markers on verbs

In Earlier Egyptian, subject person markers were suffixed either to lexical verb stems (ex. 39), post-stem TAM markers or valency-changing affixes (exx. 40-41), or to auxiliaries that precede the lexical verb (ex. 42).

(39)   *n-zp*   *mꜣ-**k***   *iw*   *pn*
       never   see:SBJV-**2SGM**   island   this
       'You will never see this island (again)' (*Sh.S.* 153-154)

(40)   *mdw-k*   *rḫ-n-**k***   *wḥꜤ-k*
       speak:SBJV-2SGM   know-ANT-**2SGM**   solve:NMLZ-2SGM
       'May you speak after you know how to solve (the problem)' (*Ptahh.* 366)

(41)   (a crocodile)   *n*   *tkn-n-tw-**f***
                    NEG.IPFV   approach-IPFV-PASS-**3SGM**
       'a crocodile that cannot be approached' (*Urk.* IV, 616,10)

(42)   *iw-**i***   *wn-n-i*   *wn-w-t*   *hrw*
       AUX-**1SG**   open-ANT-1SG   hour-PL-F   day
       'Now I have opened the hours of the day' (*CT* II, 113b)

In Later Egyptian, subject affixes are suffixed to the same categories, although post-stem TAM and valency-changing affixes are gradually lost during this period. Subject affixes are increasingly suffixed to auxiliary or light verbs (mainly the verb *iri* 'to do', ex. 44), which leads to the **entrapment** of subject expressions, including bound person markers, between an inflected auxiliary or light verb and the verbal root, and increases the frequency of subject affixes occurring before the lexical verb.

(43) *bw*   *sḏm-f*   *p3y-k*   *sḫr*   *i-ḏd(-i)*   *n-k*
      NEG.IPFV hear-3SGM   POSS-2SGM   advice   REL.PST-say-1SG to-2SGM
      'He does not listen to your advice, which I talked to you about' (K*RI* III, 535,13)

(44) *bw*   ***irw-k***   ***h3b***   *n-i*   *ʿ-k*
      NEG.IPFV **AUX-2SGM**   **send:INF**   to-1SG   state-2SG.M
      '(…) while you do not write to me how you are doing!' (*LRL* 66,14)

Furthermore, in Late Egyptian a new category of preverbal subject pronouns develops. However, these are not yet completely bound person indexes, since adverbs can occur between the person marker and the verb.

(45) ***tw-i*=*ḥms-kw***   *ḥr-ir-t*   *p3*   *ḥʿtj*
      PRON-1SG=sit-STAT   on-do-INF   the bed
      'I am busy (lit. sitting) doing the bed' (pDeM 3, 6)

(46) ***tw-i*=*dy*=*ḥms***   *ḥr-ḏd*   *n*   *n3*   *nṯr-w*
      PRON-1SG=here=sit:STAT   on-say:INF   to the.PL god-PL
      'I am presently busy (lit. 'here sitting') saying to the gods ('direct speech')'
      (oAsh.M. 269, 4-5)

In Coptic, all subject (S/A) person markers are prefixes. The following tables represent the past and the present paradigms of the verb *me* 'love':

	PAST	PRESENT
1SG	*a-i-me*	*ti-me*
2SGM	*a-k-me*	*k-me*
3SGF	*a-ø-me*	*te-me*
3SGM	*a-f-me*	*f-me*
3SGF	*a-s-me*	*s-me*
1PL	*a-n-me*	*tn-me*
2PL	*a-tetn-me*	*tetn-me*
3PL	*a-u-me*	*se-me*

Table 11: Two verb paradigms

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These two paradigms are the outcome of the two processes exemplified above, namely, (1) the spread of periphrasis with the auxiliary verb *iri* 'to do' in some patterns and (2) the new pre-verbal pronoun that appear in Late Egyptian for the first paradigm and.

	SUFFIXING	PREPOSED	PREFIXING
Earlier Egyptian	0.5	0.5	0
Late Egyptian-Demotic	0.25	0.75	0
Coptic	0	0	1

Table 12: Pronominal subject markers on verbs

Type of change:
- Grammaticalization of new pronoun paradigm > person prefix
- Minor pattern (light verb/auxiliary construction) > major pattern
- Entrapment of person marker between auxiliary and lexical verb (univerbation)

5.3 Tense-aspect affixes on verbs

As noted above, in Coptic, tense-aspect affixes, which also mark polarity, precede the verb root. Some of the TAM/Polarity prefixes in Coptic are presented in the following table.

	AFFIRMATIVE		NEGATIVE	
	BEFORE PERSON PREFIX	BEFORE LEXICAL NP	BEFORE PERSON PREFIX	BEFORE LEXICAL NP
PAST	*a-*	*a-*	*mp(e)-*	*mpe-*
AORIST	*ša-*	*šare-*	*me-*	*mere-*
FUTURE	*e- ... e-*	*ere-*	*nne-*	*nne-*

Table 13: TAM/Polarity prefixes in Coptic

In Earlier Egyptian, tense-aspect are suffixed to the verb:

Anterior: suffix *-n*
(47) *ir-**n**-i*   *iȝw-t-i*   *iw-i*   *m*   *nḫ<n>-t-i*
      do-**ANT**-1SG   office-F-1SG   SBRD-1SG   in   youth-F-1SG
      'I exercised my office while I was in my youth' (stLeiden V.4,4-5)

Future: suffix *-y* (or *-w*)
(48) *sꜥm-**y**-k*   *irf*   *m*   *išst*
      swallow-**FUT**-2SG.M   PTCL   namely   what
      'What will you will swallow?' (*CT* III, 86g)

Future-consecutive: suffix -*k3*

(49) *ḏd-**k3**-tn*   *m*   *tp-r(3)*
       say-**FUT.CNSV**-2PL   with   formula
       '(If you have no offerings with you), then you shall recite the formula ('direct speech')'
       (*Denk. Der Oase Dakhla* 58,5)

Deontic-consecutive: suffix -*ḫr*

(50) *ḫr-**ḫr***   *sšf-t*   *im-sn*
       fall-**MOD.CNSV**   respect   in-3PL
       '(When she says to people 'listen!'), then respect inevitably falls upon them'
       (*Urk* IV, 245,15)

In Later Egyptian, most of these TAM suffixes disappear. Three main scenarios can be identified.

(1) In some cases the affixes still exist but are used as prefixes in construction with similar meaning: *sḏm-ḫr-f* (ex. 50) > *ḫr-sḏm-f* (ex. 51-52) > Coptic Aorist (ex. 53).

(51) ***ḫr-šsp-f***   *mw*   *m*   *W3s-t*
       MOD.CNSV-receive-3SG.M water   from Thebes
       '(As for the one who is buried in the Necropolis), he inevitably receives water from Thebes' (K*RI* III, 592,10-11)

(52) *m-ir*   *sš*   *pḫr*   *iw*   ***ḫr-ir-k=s***
       VET   disdain:INF remedy SBRD IPFV-do-2SGM=3SG
       'Do not disdain a remedy when you're accustomed to use it (lit. do it)' (*Onchsh*. 9/6)

(53) ***ša-i-štortr***   *hrai*   *nhêt*
       AOR-1SG-distrub   LOC   in:1SG
       'I am (habitually) disturbed' (ShIII 150:14-17).

(2) Another source of TAM prefixes is the rise in frequency of periphrastic constructions, in which the auxiliary *iri* 'to do' bears inflection and governs the lexical verb ('infinitive'). Schematically:

STAGE 1	STAGE 2	STAGE 3
(a) heard-3SGM	(a) heard-3SGM	
	(b) did-3SGM hearing	(b) did-3SGM-hearing
old past	*variation*	*new past*

Table 14: replacement by periphrasis and new verb forms

See also exx. 43-44 above.

(3) Finally, some constructions are replaced by other ones in the same functional domain. The negative perfective is a case in point:

(54) *n*   *m3-i*   *mity*   *srw*   *pn*
     NEG.PFV   see:PFV-1SG similar_to goose   DEM
     'I did not see anything like this goose!' (*Meir* III,23)

(55) *ḥr*   *ptr*   *bwpw-f*   *iy-t*
     CORD   look   NEG.PST-3SGM   come-INF
     'But look, he did not come' (oDeM 10061, 20-21)

(56) *iw*   *bnp-k*   *sde*   *wbe*   *rmṯ* *nb*   *n* *p3* *t3*
     SBRD NEG.PST   talk:INF with   man any of the earth
     '(and you should go to sleep on a reed mat) without having spoken to anyone on earth' (pMagLL 5/7-8)

The negation of the past in Later Egyptian is not etymologically related to the negation of the perfective in Earlier Egyptian, but was grammaticalized from the negation of an auxiliary verb *p3j* 'to have done in the past' + infinitive: *n p3-f sḏm 'he did not do the act of hearing in the past' > *bwpw-f sḏm* 'He did not hear'.

	SUFFIXING	PREFIXING
Earlier Egyptian	0.5	0.5
Late Egyptian-Demotic	0	1
Coptic	0	1

Table 15: Tense-aspect affixes on verbs

*Types of change***:**

- Loss of tense-aspect suffixes
- Grammaticalization of new tense-aspect prefixes via periphrasis
- Replacement of older forms with new forms with prefixes

5.4 Plural affixes on nouns

In Middle Egyptian, plural affixes are suffixed to nouns.

(57) *rn*   *rn-w*
     name   name-PL
     'name'   'names'

(58) *nh.t*   *nh-w-t*
      sycomore   sycomore-PL-F
      'sycomore' 'sycomores'

In Late Egyptian, plural affixes are suffixed to nouns:

(59) *pr*   *pr-w*
      house   house-PL
      'house'   'houses'

However, plural marking is consistently marked by preposed definite and possessive markers. Compare the following examples with the lexeme *pr* 'house':

(60) *iw*   *bn*   *p3y-f*   *diw*   *m*   *p3*   *pr*
      SBRD   NEG.EXIST DEM.M-3SGM   ration   in   DEF.M.SG house
      'while his rations are not in the house' (oCairo CG 25227, rº 6)

(61) *iw-w*   *w3ḥ-w*   *m*   *p3*   *r(3)*   (*n*) *n3*   *pr-w*
      CORD.PST-3PL leave:INF-3PL   in   DEF.M entrance   of   DEF.PL   house-PL
      'And they left them at the entrance of the houses' (pBM EA 10403, 1,24)

(62) *šd-tw*   *n3*   *ẖl-w*   *m*   *n3y-sn*   *pr-w*
      take_away:SBJV-PASS   DEF.PL chisel-PL from POSS.PL-3PL house-PL
      '(…) and the chisels will be taken away from their houses (so as to be given back to Pharaoh)' (K*RI* IV, 318,12-13)

The situation is similar in Demotic. Coptic has both prefixing and suffixing for this parameter. Suffixing is no longer productive in Coptic, as the suffixed plural markers are lexically restricted. Plural-marking suffixes often co-occur with some form of stem-alternation (Layton 2004: 87).

(63) *ebot*   'month'   *ebate*   'months'
(64) *tbnê*   'beast'   *tbnooue*   'beasts'

Productive plural marking, on the other hand, is characterized by prefixed definite and indefinite determiners.

(65) *p-rôme*   'the man'   *n-rôme*   'the men'
(66) *ou-rôme*   'a man'   *hen-rôme*   '(some) men'

	SUFFIXING	PREFIXING
Earlier Egyptian	1	0
Late Egyptian-Demotic	.25	.75
Coptic	.25	.75

Table 16: Plural affixes on nouns

Type of change:

- Replacement of older suffix constructions with new prefix ones.
- Older construction remains as non-productive relic.

5.5 Pronominal possessive affixes on nouns

In Earlier Egyptian, possessive affixes are suffixed to nouns.

(67) *pr*　　　*pr-k*　　　　　　*pr-ṯn*　　　　　　*pr-w-ṯn*
　　　house　　house-**2SGM**　　house-**2PL**　　house-PL-**2PL**
　　　'house'　'your (SGM) house' 'your (PL) house' 'your (PL) houses'

In Late Egyptian, the older strategy is retained (ex. 68), but is recessive in the face of a newer strategy, which involves preposed possessive determiners, which are grammaticalized from demonstrative pronouns (*pꜣ/tꜣ/nꜣ*) with suffixed person markers (ex. 69) (Gardiner 2015; Sojic 2015; Winand 2015):

(68) *ꜣb-k*　　　　　*in-tw-i*　　　　　　*r*　　*pr-k*
　　　wish:PST-2SG.M bring-SBJV.PASS-1SG ALL house-**2SGM**
　　　'you wished that I be brought to your house' (pTurin 1882, rᵒ 4,5)

(69) *pꜣy-k*　　　　*pr*　　*m-sšr*
　　　POSS.M-**2SGM** house excellent
　　　'Your house is in excellent state!' (pBologna 1094, 8,4-5)

Similarly to Late Egyptian and Demotic, Coptic has both the older strategy and the newer strategy (ex. 70 and 10-12 above). However, in Coptic, the earlier preposed possessive determiners are prefixed to nouns.

(70) *ran*　　　　　　　'name'　　　*rnt-f*　　　　　　　　'his name'
　　　name　　　　　　　　　　　　name-3SGM

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	SUFFIXING	PREFIXING
Earlier Egyptian	1	0
Late Egyptian-Demotic	.25	.75
Coptic	.25	.75

Table 17: Pronominal possessive affixes on nouns

If we take into account only the *productive* strategy, however, then Coptic has a score of 1 for prefixing and 0 for suffixing.

	SUFFIXING	PREFIXING
Earlier Egyptian	1	0
Later Egyptian	.25	.75
Coptic	0	1.0

Table 18: Pronominal possessive affixes on nouns

5.6 Definite or indefinite affixes on nouns

Coptic has a system of prefixed definite and indefinite marking on nouns.

(71) *p-ran*   *t-shime*   *ne-shime*
      DEF.MSG-name   DEF.FSG-woman   DEF.PL-woman
      'the name'   'the woman'   'the women'

(72) *ou-ran*   *hen-ran*
      INDEF.SG-name   INDEF.PL-name
      'a name'   '(some) names'

While there are sporadic examples in Earlier Egyptian, they are only really conventionalized and frequent in Late Egyptian. Each one has its own pathway, with the definite marker being earlier and faster (ex. 73) than the indefinite singular (ex. 74-75), and the indefinite plural being latest of all (ex. 76-77).

(73) *iw*   *p3*   *k3wtj*   *ḥr*   *t3*   *k3-t*
      SBRD   DEF.MSG   worker   on   DEF.FSG   work-F
      'while the worker is at work' (oCairo 25667, 5-6 [18th dyn.])

(74) *ꜥḥꜥn*   *rd-n*   *p3*   *wr*   *n Ḳdš*   *pr*   *wꜥ*   *ssm.t*
      SEQ.PST CAUS-PST   DEF.M   great   of Qadesh go_out:INF   one/INDEF   team_of_horses
      'Then the chief of Qadesh made a (single) team of horses go out' (*Urk.* IV 894,5)

(75)   *di*   *n-i*   *Ỉꜥḥ-ms*   *wꜥ-t*   *šꜥd*   *n*   *ḏmꜥ*
      give:PST to-1SG Ahmose INDEF-F piece   of   papyrus
      'Ahmose gave me a piece of papyrus' (pRylands 9, 2/1)

(76)   *rmṯ*   *i-šsp*   *nh3*   *ḥḏ*
      men   PTCP.PST-receive   some.PL   silver
      'Men who received some silver' (pMayer A 12,9)

(77)   *sḏm-n*   *hyn*   *md-w-t*   *ḏb3*   *N3-nfr-ib-rꜥ*
      hear:PST-1PL INDEF.PL thing-PL-F   about   Naneferibra
      'We heard stories about Naneferibra' (pBerlin P 13562, 7-9)

	SUFFIXING	PREFIXING
Earlier Egyptian	0	.25
Late Egyptian-Demotic	0	1
Coptic	0	1

Table 19: Definite/indefinite affixes on nouns

Type of change:
- Grammaticalization (demonstrative > definite article > definite affix; 'one' > indefinite article > indefinite affix)
- Independent word > affix

5.7 Pronominal object affixes on verbs

In Earlier Egyptian, there are two series of bound person markers or pronouns that can mark P of transitive verbs. The first series are suffixes, the second are clitics. They are distinguished by a number of properties, which need not concern us here.

	Series I (suffixes)	Series II (clitics)
1SG	*-i*	*=wi*
2SGM	*-k*	*=ṯw*
2SGF	*-ṯ*	*=ṯn*
3SGM	*-f*	*=sw*
3SGF	*-s*	*=sy*
1PL	*-n*	*=n*
2PL	*-ṯn*	*=ṯn*
3PL	*-sn/-w*	*=sn*

Table 20: Two series of bound person markers

In Earlier Egyptian, most finite verbs, as well as participles, occur with Series II as P:

(78) *rdi-ḫr-k*   *wrḥ-f=sw*
      CAUS- CNSV-2SG.M[series I]   anoint:SBJV-3SGM[series I]=**3SGM[series II]**
      'And you shall make him anoint himself' (pEbers 52,1)

(79) *in=wi*   *r*   *niw-t*   *iw-i*   *ꜥnḫ-kw*
      bring:IMP=**1SG[series II]** ALL   Thebes-F   SBRD-1SG[series I]   live-STAT
        'Bring me back to Thebes alive (lit. while I am alive)' (*LRL* 38,5-6)

(80) *pš-w=st*   *r*   *nꜣ*   *sꜣ-w*
      divide:PST-3PL[series I]=3PL[series II] ALL   DEF.PL Phyle-PL
        'They divide them up between the Phyles' (pRylands 9, 4/1)

Only for infinitives is P marked by Series I pronouns.

(81) *m*   *pr-t-f*   *tp-t*
      in   go_out-INF.F-**3SGM**   first-F
      'during his first outing' (CGC 20057, d1)

(82) *imj-k*   *ir-f*
      VET.SBJV-2SG.M do:INF-**3SGM**
      'Please don't do it' (pBoulaq IV, 14.15 = *Ani*)

(83) *iw-n*   *wn-f*
      SEQ.PST-1PL   open:INF-**3SGM**
      'And we opened it' (pMayer B, 14)

As noted above, in Late Egyptian, periphrastic constructions, in which the lexical verb is realized by an infinitive, come to dominate the verbal system. As such, the frequency of Series I pronouns rises for marking P:

(84) *bn*   *tw-i=ḫn-kwi*   *n-k*   *iry-i*   *swnwn-k*
      NEG   PRON-1SG=approach-STAT.1SG   to-2SG.M   AUX.SBJV-1SG flatter:INF-**2SGM**
      'I did not approach you so as to flatter you!' (pTurin A, vᵒ 4,8)

In Coptic, the periphrastic constructions have been totally generalized and grammaticalized as non-periphrastic constructions, so Series I suffixes totally dominate P-marking. From a theoretical point of view, this is interesting, since it is normally assumed that clitics, over the course of grammaticalization, become affixes.

lexeme > 'heavy' function word > clitic function word > affix > inflectional formative (> zero)

Egyptian-Coptic shows an alternative pathway through which affixes can come to dominate clitics in a language: by constructions that occur with affixes in a particular domain becoming more frequent than constructions that occur with clitics within the same domain, without clitics 'becoming' affixes, without any 'clitic-to-affix' grammaticalization.

	SUFFIXING	POSTPOSED	PREFIXING
Earlier Egyptian	.25	.75	0
Later Egyptian	.5	.5	0
Coptic	1	0	0

Table 21: Pronominal object affixes on verbs

Type of change: minor-to-major pattern shift without grammaticalization

5.8 Negative affixes on verbs

Negative elements were always preposed to verbs, and possibly prefixed. From Late Egyptian onwards, negations in main verbal clauses began to be univerbated with TAM auxiliaries.
See examples 18-22 and 54-56 above.

	SUFFIXING	PREPOSED	PREFIXING
Earlier Egyptian	0	1?	1?
Later Egyptian	0	.5	.5
Coptic	0	0	1

Table 22: Negative affixes on verbs

Type of change: univerbation, grammaticalization of portmanteau TAM/Polarity prefixes

5.9 Interrogative affixes on verbs

While focus morphology is associated with interrogatives since Earlier Egyptian, it is only in Coptic that it is used for direct yes/no questions. See examples 26-27 above.

	SUFFIXING	PREFIXING
Earlier Egyptian	0	0
Later Egyptian	0	0
Coptic	0	.25

Table 23: Interrogative affixes on verbs

Type of change: secondary grammaticalization (focus > interrogative)

5.10 Adverbial subordinator affixes on verbs

In Late Egyptian, optional clause-initial conjunctions begin to be univerbated with auxiliary verbs, creating, in effect, adverbial subordinator prefixes on verbs.

Earlier Egyptian
(85)   [A torch will be lighted for you]
    r   *wbn-t*   *šw*   *ḥr*   *šnb-t-k*
    until   rise-LIM   sun   on   breast-F-2SGM
    'Until the sun has risen over your breast'

Later Egyptian
Periphrasis (lexical verb > *iri* 'do') and univerbation of conjunction (*r-* > *i-*)
(86)   [Seize this woman, and make her a prisoner]
    i-ir-t--*tw-gm*   *iṯꜣw-rmṯ*
    LIM1-do-LIM2-IMPRS-find   thief-man
    'until a thieving person is found.'

Addition of new 'until' conjunction:
(87)   *šꜣꜥ-**iirt**-i-šm*   *r-rsy*
    until-LIM-1SG-go   ALL-south
    'until I go south'

(88)   ***šant***-*n-hôtb*   *m-paulos*
    LIMIT-1PL-kill   ACC-Paul
    'until we kill Paul.' (Acts 23:12)

	SUFFIXING	PREFIXING
Earlier Egyptian	1	0
Later Egyptian	0	.75
Coptic	0	1

Table 21: Adverbial subordinator affixes on verbs

Type of change: Grammaticalization, via periphrasis and univerbation

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Incidentally, this is a counterexample to an otherwise robust universal: 'A logically possible type for which I have no clear example is a language where the adverbial subordinator is a prefix on the verb' (Dryer 2013).

5.11 Summary

The following table summarizes the parameters, if and when they shifted to prefixing, and through what process of language change.

PARAMETER	TYPE OF CHANGE	EMERGENCE	FULLY GRAMMATICALIZED
Case affixes on nouns	grammaticalization	Late Egyptian (ACC) Demotic (NOM)	Demotic (ACC) Coptic (NOM)
Pronominal subject affixes on verbs	(1) grammaticalization (2) marginal-to-major pattern + entrapment	Late Egyptian	Coptic
Tense-aspect affixes	(1) loss of suffixes (2) grammaticalization of auxiliary constructions	Late Egyptian	Coptic
Plural affixes on nouns	replacement	Late Egyptian	Coptic
Pronominal possessive affixes	replacement	Late Egyptian	Coptic
Definite or indefinite affixes	grammaticalization	Late Egyptian	Late Egyptian (DEF) Coptic (INDEF)
pronominal object affixes on verbs	minor-to-major pattern	Old Egyptian	Coptic
Negative affixes on verbs	grammaticalization	Late Egyptian	Coptic
Interrogative affixes on verbs	grammaticalization	Late Egyptian	Coptic
Adverbial subordinator affixes on verbs	grammaticalization	Late Egyptian	Coptic

Table 22: summary of changes

5.12 A finer-grained look at the diachrony of affixing preferences

		EARLIER EGYPTIAN		LATER EGYPTIAN		COPTIC	
		Suff.	Pref.	Suff.	Pref.	Suff.	Pref.
1	case affixes on nouns	0	0	0	.5	0	2
2	pronominal subject affixes on verbs	1	1	0.5	1.5	0	2
3	tense-aspect affixes on verbs	1	1	0.5	1.5	0	2
4	plural affixes on nouns	1	0	.25	.75	0	1
5	pronominal possessive affixes on nouns	1	0	.25	.75	.25	.75
6	definite or indefinite affixes on nouns	0	.25	0	1	0	1
7	pronominal object affixes on verbs	.25	0	.5	0	1	0
8	negative affixes on verb	0	1	0	1	0	1
9	interrogative affixes on verbs	0	0	0	0	0	1
10	adverbial subordinator affixes on verbs	1	0	0	.75	0	1
Total		5.25	3.25	2.0	7.75	1.25	11.75
Affixing index		65.4%		75%		100%	
Suffixing vs. prefixing		40.4%	25%	15.4%	59.6%	9.6%	90.4%

Table 23: the affixing preference over time

Broadly, Egyptian Coptic went from (Earlier Egyptian) moderate suffixing preference (62% [40.4/65.4] > (Later Egyptian) moderate prefixing preference (79% [59.6/75]) > (Coptic) predominantly prefixing (90.4%).

6. Conclusions

We set out from the observed worldwide 'suffixing preference.' Rather than attempting to explain the suffixing preference, we asked how dispreferred structures are nonetheless attested.

This is directly relevant to a question highlighted in Good (2008) and elsewhere, namely, the relationship between language universals and language change: do synchronic structural universals constrain change, or do diachronic universals, perhaps ultimately motivated by synchronic *usage* factors, give rise to synchronic universals? Kiparsky (2008) argues that the form of synchronic grammars constrains change, i.e., languages should not be able to change in such a way that they flout Universal Grammar. Greenberg (1966), a seminal paper on diachronic universals, made a similar proposal, i.e., 'no diachronic change gives rise to a synchronically nonexistent type.' On the other hand, for Bybee (2008), the most robust universals are in fact universals of language change, and synchronic states are in a sense epiphenomal.
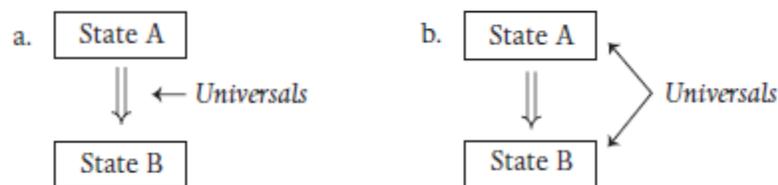
In this paper, we argue that universally dispreferred structures can and do arise as the result of regular language change, given the right background structures as the particular 'ecology' in which change takes place. In this respect, we corroborate the claim of Harris (2008), which we quote in full:

> '... unusual or rare features are unusual or rare because they are the accidental result of many different circumstances or conditions being lined up in just the right way. […] If a construction can only develop by passing through a relatively large number of changes, or can only develop if certain conditions exist, or some combination of these, simple probability tells us that it will be less common than a construction that develops through fewer steps or requiring fewer conditions. This explanation does not depend on one change being less common than another, or on some conditions being infrequent; on the contrary, it assumes as a starting point that all changes and all conditions are equally common. It is the combination that is uncommon, not any of the specific elements.' (Harris 2008: 55-57).[1]

- Specifically, we showed that Ancient Egyptian-Coptic (Afroasiatic) shows a long-term diachronic macro-change from mixed suffixing-prefixing to an overwhelming preference for prefixing.

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1 Greenberg (1978: 75) and Blevins (2004) consider certain changes to be more frequent than others, and Greenberg proposes that certain structures are unstable, i.e, prone to change. However, Harris disputes these positions on empirical grounds. For present purposes, and given the current state of our knowledge about the cross-linguistic frequency of types of change, it is better to remain agnostic about this question.

- Furthermore, we argue that each of the micro-changes implicated in this macro-change are better understood in terms of changes at the level of individual constructions, e.g., via grammaticalization, rather than in terms of a broad Sapirian 'drift.'
- Crucially, it is the particular constellation of structural features of the language at a particular moment in time, together with regular mechanisms of language change, that give rise to the cross-linguistically unusual 'macro-preference' of the language.
- By making this claim, we corroborate the arguments made by Mithun (2003: 178) and Creissels (2008: 2), who point out that harmonic word orders may not *directly* reflect cognitive principles, but are rather the product of processes of language change.
- Specifically, we demonstrate that changes in affix order in Ancient Egyptian-Coptic occur at different times, at different rates, and to different degrees in different domains.
- Our basic claim is that prefixes develop at different times and different rates in different domains, and it is only if we consider the changes from their endpoint that the whole macro-change has a conspiratorial look to it.
- Crucially, there is nothing unusual about the actual processes of change themselves; what may be unusual, from a cross-linguistic point of view, is the length of uninterrupted documentation of a single language, which allows us to observe long-term changes with abundant evidence.
- In short, we argue that Ancient Egyptian-Coptic looks as though it is swimming against the typological tide, although it is constantly paddling along with the usual tides of language change.

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