

critical apparatus necessary for determining style values, frequencies, dates of use, etc, are almost totally lacking. Even a decent English - Egyptian dictionary is not available, and so several Egyptian - English and Egyptian - German dictionaries had to be waded through in the hope that the items that appeared on the list would be recalled in a confrontation with literally thousands of pages. In many instances a single item on the list eventually had an embarrassing number of Egyptian equivalences with no clear cut criteria for choosing one rather than another. Thus, from Erman and Grapow's seven-volume *Wörterbuch der Aegyptischen Sprache* (1963), I noted the following items for 'child', quoted in their transcription: ḥ^c3, ^{cc}j, šfj, šrj, ḥ(j), itj (or id), šd.tj, ḥnw (or ḥn), šjf, nn, šr. From Faulkner's 1962 *A concise dictionary of Middle Egyptian* for the same item, in his transcription: ms, ḥnw, ḥrd, sdy, šri. From a much earlier work by Budge (1920, *An Egyptian hieroglyphic dictionary*, still useful if only for its listing of Koptic reflexes) again for the same item and in his transcription: áṭ, aru, uatchḥ, uai, unnu, mes, nu, nekh, ḥert, khi, khar, kheft(i), kha(r)t, sif, shi, tchefen. The Koptic examples offered similar but less exasperating profusion. For these and similar reasons, I am not at all sure that one can even compile lists for Egyptian adequate for glottochronological testing; the lists given in Table I have only the virtue of being public and thus subject to scholarly correction.

The Ancient Egyptian forms are quoted in a transliteration using Africa Alphabet conventions, supplanted by IPA and some other symbols when necessary, rather than the symbols used by Egyptologist. Correspondences include ? = f, ḥ = 3, q = k, ḥ = h, ḥ = h, ḥ = h, x = h, z = s, š = š, j = d, c = t, i = i. Koptic forms are transliterated similarly; note that c is a palatalized dental, c a palatalized velar.

Table 1. EGYPTIAN

	ANCIENT	AKHMIIMIC	BOHARIC	SA ^c IDIC
1 -alive	?nx (v.)	+t-nxo	+t-anxo	+t-anho
2 *all	nb	-ter	-ter	-ter
3 and	nm	+mn	+nem	+mn
4 animal	?qm	?	?	?
5 -arm	gbq	+cbaei	+čphoi	+cboi
6 *ashes	qrmt	+krmes	+kermi	+krmes

7 at	ḥr	+hi	+hi	+hi
8 back	zḥ	-pahou	+soi	+soi
9 bad	byn	+bououne	+bn	+bn
10 *bark	qqty	?	?	?
11 because	ḥr	-abal če	-ebol če	-ebol če
12 *belly	qt	+xei	-kari	+hi
13 *big	zwty	-nac	-noč	-noc
14 *bird	ḥpd	-halet	-halet	-halet
15 *bite	psḥ	+pḥs	?+la-psi	+pḥs
16 *black	km	+khem	+khmom	+khmom
17 *blood	snf	+snaf	+snof	+snof
18 blow	nfḥ	+nife	+nifi	+nife
19 *bone	qḥz	+kees	+kas	+kas
20 **breasts	qḥbt	+keibe	+kifi	+ekibe
21 breathe	nfy	+nife	+nifi	+nife
22 *burn	mḥ	+mouh	+moh	+mouh
23 child	mz, fry	+fere	+fēri	+fere
24 **claw	yḥ	+ieib	+ieb	+eib
25 cloud	qrr	+kloole	-cepi	+kloole
26 *cold	ḥs	?	-hrof	-jrf
27 *come	iy	+ei	+ei	+ei
28 count	ip	+ḥp	+ḥp	+ḥp
29 cut	izp	-fale	-ouč	-ouoče
30 **dark	kk	+keke	+khaki	+kake
31 day	hrw	+hooue	+ehoou	+hoou
32 *die	mwt	+mou	+mout	+moout
33 dig	fḥd	-cri	-cre	-cre
34 dirty	ḥt	?	?	?
35 *dog	bfm, whr	+ouhar	+ouhor	+ouhor
36 -down	?	?	?	?
37 *drink	swy	+sou	+sḥ	+sḥ
38 *dry	fw	+feoue	+fooui	+fooue
39 dull	?	?	?	?
40 dust	xmw, xyxy	+xaeix	+foeif	+foeif
41 *ear	msjr, ?nx	+meeče	+mač	+mače
42 *earth	qḥh, tnn	+kah	+titen	+eitn
43 *eat	wmm	+oum	+oum	+oum
44 *egg	zwḥt	+sauhe	+souhi	+souhe

45	*eye	mrt	+bel	+bal	+bal
46	fall	h ^{ci} i	+heeie	+hei	+he
47	far	w ^{cy}	+oueie	+ouei	+oue
48	*fat-grease	w ^{ci} w ^{ci}	?-ouot	?-ot	?-ot
49	father	iti	+eiot	+i ^{ot}	+ei ^{ot}
50	fear	snj	?	?	?
51	*feather	fwt, mht	?	+mehi	+mehe
52	few	?nj	-sbak	-sbok	-sbok
53	fight	ʔh ^q	-mieixe	-mi ^{fi}	-mi ^{se}
54	*fire	xt	-k ^{ot} ht	-k ^{rom}	-k ^{ot} ht
55	*fish	rm	?	?	?
56	five	dyw	+tiou	+tiou	+tiou
57	float	?	?	n ^{ebi}	n ^{eebe}
58	flow	xdi	-sok	-sok	-sok
59	flower	hr ^{rt}	+hrere	+ehreri	+hrere
60	*fly vb	p ^{ci}	-hol	-hol	-hol
61	fog	zym	?	?	?
62	*foot	rd	+pet, ret=	+phat, rat=	+pat, rat=
63	four	fdw	+ftau	+ftoou	+ftoou
64	freeze	?	o ^{ce} be	o ^{ceb}	o ^{cb}
65	fruit	prt	-etax	-outax	-outax
66	**full	?bh	?	?	?
67	-fur	?	?	?	?
68	*give	rdy, t	+ti	+ti	+ti
69	*good	nfr	-nanou	+nofer	+noufr
70	grass	fnw	?+sim	?+sim	?+sim
71	*green	w ^{ci} lj	?	+ouot	+ouot
72	guts	m ^{ctw}	?	+maxt	+maht
73	*hair	fnw	-ok	-foi	-cok
74	*hand	jrt	+tore	+tori	+tore
75	he	ntf	+antaf	+anthof	+antof
76	*head	tp	-ape	-aphe	-ape
77	*hear	zjm	+sotme	+sotem	+sotm
78	*heart	h ^{ci} ty	+het	+het	+het
79	heavy	dnz	-hraf	-hrof	-hrof
80	here	ʔ ^{ci}	?	-mnai	-tai
81	hit	hwi	-kolh	-kolh	-kolh
82	hold-take	ici	-ol	-oli	-ol

83	**horn	db	+tep	+tap	+tap
84	how	mi m	-to	-thon	-ton
85	hunt	bhz	-c ^{ore}	-c ^{ore}	-c ^{ore}
86	husband	h ^{ci} ly	+hei	+hai	+hai
87	*I	h ^{ci} nk	+anak	+anok	+anok
88	ice	?	ceb	caf	caf
89	if	ir	-axome	?-arnou	?-arnu
90	in	m	+n=	+n=	+n=
91	*kill	qdb	+xotbe	+xoteb	+hotb
92	**knee	p ^{ci} d	+pet	+phat	+pat
93	*know	h ^{ci} m	+mme	+emi	+eime
94	lake	h ^{ci} nt	?	?	?
95	laugh	sby	+sobe	+sobi	+sobe
96	*leaf	g ^{ci} bt	+cobe	+cobi	+cobe
97	leftside	i ^{ci} by	-cbir	-ca ^{ce}	-hbour
98	leg	w ^{ci} rt	+ouete	+ouete	+ouete
99	*lie(down)	sjr	-ntate	-enkot	-nkotk
100	-lip	zpt	+spatou	+sphotou	+cpotou
101	live	ʔnx	+onx	+onx	+onh
102	*liver	mist	?	-oupha ^{ci}	?
103	*long	'w	?	-fiai	-fiai
104	*louse	?	?	kakthi	kakte
105	*man-male	z, rmc	+rome	+romi	+rome
106	*many	ʔ ^{ci} q	+afei	+afai	+afai
107	*meat-flesh	iwf	+ef	+af	+af
108	-milk	irct	+erote	+eroti	+erote
109	**moon	i ^{ci} ph	+ooh	+ioh	+ooh
110	mother	m't	+mo	+mau	+maau
111	*mountain	dw	+tau	+tjou	+toou
112	*mouth	r	-paice	+ro	?+tap-ro
113	*name	rn	+ren	+ran	+ran
114	narrow	g ^{ci} w	+ceou	+ceou	+ceou
115	-navel	q ^{ci} p'	?	-xelpi	-helpe
116	near	tkn	?	?	?
117	*neck	n ^{ci} bt	-mekh	-moti	-makh
118	*new	m'wy	-brre	-beri	-brre
119	*night	wx'	+ouxi	-e ^{ci} orh	+ou ^{ci} e

120	*nose	f ^{rt} , fnj	±fe	±fai	±fa
121	*not	nfr	-mmn=	-mmon	-mmn=
122	old	is	+es	?+ap-as	+as
123	*one	w [?]	+oue	+ouai	+oua
124	other	ky	+ke	+ke	+ke
125	*person	jz	?	?	?
126	play	h [?] b	+sobe	+sobi	+sobe
127	pull	sc [']	?	+soksek	+soksek
128	push	wdi	-tōcne	-rōčp	-bōpre
129	*rain	h ^{wyt}	?	-mou nōfi	-hōu mpe
130	*red	dfr	+tōrf	+thōrf	+tōrf
131	right-correct	?q [']	?	?	?
132	rightside	wnmy	+ounem	+ouinam	+ounam
133	-ripe	jd [']	?	?	+čate
134	river	itrw	?-iero	?-iaro	?-eiero
135	*road-path	w ^{'t}	-mamm	-mamm	-mamm
136	*root	w ^{'o}	-noune	-noune	-noune
137	rope	nw ^h	+nouh	-amfi	+nouh
138	rotten	?	?	?	?
139	**round	fny	?	?	?
140	rub	?	xite	hōti	hat=
141	salt	h ^m 't	+hmou	+hmou	+hmou
142	*sand	f ^{'y}	+fou	+fō	+fō
143	*say	jd	-pače	-peče	-peče
144	scratch	p ^{'x}	-xououk	-xōk	-hōōke
145	sea	ym	+eiam	+iom	+eiom
146	*see	nw	+no	+nau	+nau
147	*seed	prrt	+bre	+brai	+ebra
148	sew	?	?	thōrp	tōrp
149	sharp	mds	-taam=	-thēm	-tōm
150	short	h ^w '	?	?-hebi	?-hibe
151	sing	h ^{zi}	?	+hōs	+hōs
152	*sit	h ^{mzi}	+hmest	+hemsī	+hmoos
153	*skin	msk [']	-xaare	-anou	-faab
154	sky	pt	+pe	+phe	+pe
155	*sleep vb	nqdd	+nkate	+enkot	+nkoth
156	*small	f ^r	+fire	+firi	+fire

157	smell	xnm	?	+felem=	+fōlm
158	*smoke	h ^{ty}	-krmts	-khremte	-kōrm
159	smooth	id [']	-sleclac	-slačleč	-slocle
160	snake	?	?	?	?
161	snow	zrq	-čef	-čaf	-čaf
162	some	nkt	-laaue	-hli	-laau
163	spit-saliva	?	?	thaf	pacse
164	split	t ^f '	-ōf	-kōf	-ouōff
165	squeeze	?f ^q	?	ōfi	ōfe
166	stab-pierce	tk ^s	?	+tōkās	-lōks
167	*stand	?h [?]	+ōhe	+ohi	+ōhe
168	*star	zw	+siou	+siou	+siou
169	stick	f ^{bd}	?	?	?
170	*stone	inr	+ōne	-ōpi	+ōne
171	straight	?	sautne	sōuten	sooutn
172	suck	snq	?	+sōnk	+sōnk
173	*sun	r [?]	+rei	+rē	+rē
174	swell vb	f ^f	?	+fafi	+fafe
175	*swim	nbi	?	+nēbi	+nēēbe
176	*tail	zd	+set	+sat	+sat
177	that	pf	?	+phē	+pē
178	there	im	+mo	+mau	+mou
179	they	ntw	+ōntau	+ōnthōou	+ōntoou
180	thick	wmt	-tōk	+oumot	+oumot
181	thin	p ^{'q}	?	?	+pake
182	think	k ^{'y}	-makmk	-mokmek	-mokmek
183	*this	pw ^y	+pei	+phai	+pai
184	*thou	ntk	+ōntak	+ōnthok	+ōntok
185	three	xmt	+xamt	+fōmti	+fōmnt
186	throw	qm [']	-tōk	-hioui	-nouče
187	tie	mr	+mour	+mour	+mour
188	*tongue	nz	+les	+las	+las
189	*tooth	n ^{hjt}	+neče	+načhi	+nače
190	*tree	f ⁿ	+fēn	+f ^f ēn	+fēn
191	turn	msbb	-kōte	-kōti	-kōte
192	*two	znty(f)	+snau	+snau	+snau
193	-up	qs h ^{ry}	-ačn=	-ečen	-ečn=

194	vomit	q ⁹ ?	?+ka bal	-fiti	?+ka bol
195	*walk	çmm	+maahe	+mo/i	+moofe
196	*warm-hot	fmm	?+xmam	?+xmom	?+hmom
197	wash	i'y	+eið	+iði	+eið
198	*water	nt	-kɔte	-kɔti	-kɔte
199	*we	inn	+anan	+anon	+anon
200	wet	np'	?	-hɔrp	-hɔrp
201	*what ?	ifzt	-nim	+af	+af
202	when ?	sy-nw	?	-nthnau	-tnau
203	where ?	cny	+to	+thɔn	+tɔn
204	*white	h̄j	-ouɔbf	-ouɔbf	-alau
205	*who ?	nm	+nim	+nim	+nim
206	wide	wsx	?	?	?
207	wife	h̄mt	?+shime	?+shimi	?+shime
208	wind n	c'w	+tɛou	+thɛou	+tɛu
209	wing	jnh̄	+tnh	+tenh	+tnh
210	wipe	sk	?-sɔlc	?-sɔlc̄	?-sɔlc
211	with	h̄n?	-mn=	-nem=	-mp=
212	*woman	xmt, st	±shime	±shimi	±shime
213	woods	zɔr	-bou	-bɔ	-bɔ
214	worm	fnc	+fnt	+fent	+fnt
215	ye	ntcn	+əntɔtne	+ nthɔten	+ ntɔtɔn
216	year	rnpt	+rampe	+rompi	+rompe
217	*yellow	qny	-marf	?	-mrof

The values of symbols preceding the Koptic forms in Table 1 are as follows :

- + a direct continuation of the Ancient Egyptian form.
- ?+ possibly a direct continuation, but not clearly so.
- not a direct continuation.
- ?- probably not a direct continuation, but not altogether impossible.
- ± unclear as to which items given in either the Ancient Egyptian or the Koptic lists should be considered.

In the evaluation of the data, the three lists were considered separately: (1) the entire 217-word list, (2) the 100-word list, (3) the 200-word list. In establishing retention percentages, only strictly unambiguous items (i.e., those preceded by +) should be used, but I have here considered three possibilities:

- (a) minimal retention (only + words).
- (b) modified retention (+ and ± words).
- (c) maximum retention (+, ?+, ±, ?-words).

For each dialect, the total number of items found for each of the three lists is given, the three retention figures are given, and the retention rate is expressed as a three-place decimal in accompanying parentheses:

	217	100	200
Ancient-Akmiimic	167	87	165
a. minimal	99 (.592)	55 (.632)	88 (.564)
b. modified	109 (.653)	63 (.724)	98 (.628)
c. maximum	116 (.694)	65 (.747)	105 (.673)
Ancient-Boharic	186	93	170
a. minimal	107 (.575)	55 (.591)	97 (.570)
b. modified	118 (.634)	64 (.688)	108 (.635)
c. maximum	128 (.688)	68 (.731)	118 (.694)
Ancient-Sa ^c idic	178	92	166
a. minimal	104 (.584)	58 (.630)	93 (.560)
b. modified	115 (.646)	67 (.728)	104 (.626)
c. maximum	125 (.702)	70 (.760)	114 (.686)

The retention rates for the 100-word lists are consistently greater than for the others, not only for Egyptian but also for nearly all the other languages to be considered in this paper. This fact strongly supports one of the fundamental assumptions of glottochronology, that some segments of the vocabulary are indeed more impervious to change than others.

As for the assumption of a constant rate of morpheme decay for all languages at all times, the data here are not so auspicious. The time span we are dealing with is about 3000 years, i.e., c. 2500 B.C. to c. 500 A.D. Following Lees's computation, we should expect something like a .462 retention for a three millenium period of time. The lowest percentage is only .560, which appears for the 200-word list of Sa^cidic. The other minimal