

Appendix A. Simple nouns

Table 1 gives the frequency of nouns in each language of the family. The highest number of nouns have been borrowed from Hindi, Irish, Scots, Arabic, Japanese and Maori. A smaller number of words are rooted in Sanskrit, Gaelic, Persian, Algonquian, Chinese, Turkish, Welsh, Malay, Romani, Tagalog, Celtic, Inuit, Tagalog, Tamil, Hebrew and Australian Aboriginal languages. The origin of two nouns or less is accounted for by Bengali, Nepali, Urdu, Polish, Czech, Ukrainian, Croatian, Bulgarian, Hawaiian, Tupi-Guarani, indigenous languages of Peru, Sranan Tongo, Cantonese, Pidgin, Sherpa, Burmese, Finnish, Hungarian, Korean, Javanese, Adnyamathanha, Nyungar, Telugu, Mandinka, Swahili, Tswana, Shona, Somali Tai and Mon.

Table 1. The frequency of simple nouns in the category of ‘Other languages’ in the sample

Indo-Aryan		Polynesian		Altaic	
Hindi	29	Maori	16	Turkish	7
Hindi dual route	5	Maori and dual routes	1	Finnish	1
Sanskrit	14	Hawaiian	2	Hungarian	1
Sanskrit dual route	1	Slavic		Korean	1
Bengali	1	Russian	8	Austronesian	
Nepali	1	Ukrainian	1	Tagalog	3
Romani	4	Polish	2	Malay	6
Angloromani	4	Czech	2	Javanese	1
Urdu	2	Croatian	1	Aboriginal Australian	
Celtic		Bulgarian	1	Australian Aboriginal	3
Irish	17	Languages of the Americas		Dharuk	2
Scots	17	Virginia Algonquian	5	Adnyamathanha	1
Gaelic	10	Inuit	4	Nyungar	1
Welsh	7	Tupi-Guarani	1	Dravidian	
Celtic	4	South American Indian language of Peru	2	Tamil	3
Cornish	2	Sierra Miwok	1	Tamil dual routes	2
Semitic		Southern New England Algonquian language	1	Telugu	1
Arabic	22	Maliseet-Passamaquoddy/Micmac	1	African languages	
Arabic dual routes	2	Sranan Tongo	1	Mandinka	1
Hebrew	3	Sino-Tibetan		Swahili	2
Hebrew dual routes	2	Chinese	8	Tswana	1
Assyrian	1	Cantonese	1	Shona	1
Japonic		Pidgin	1	Somali	1
Japanese	26	Sherpa	1	Kra-Dai	
Western Iranian		Burmese	1	Tai	1
Persian	11	Astro-Asiatic			
Persian dual routes	9			Mon	1

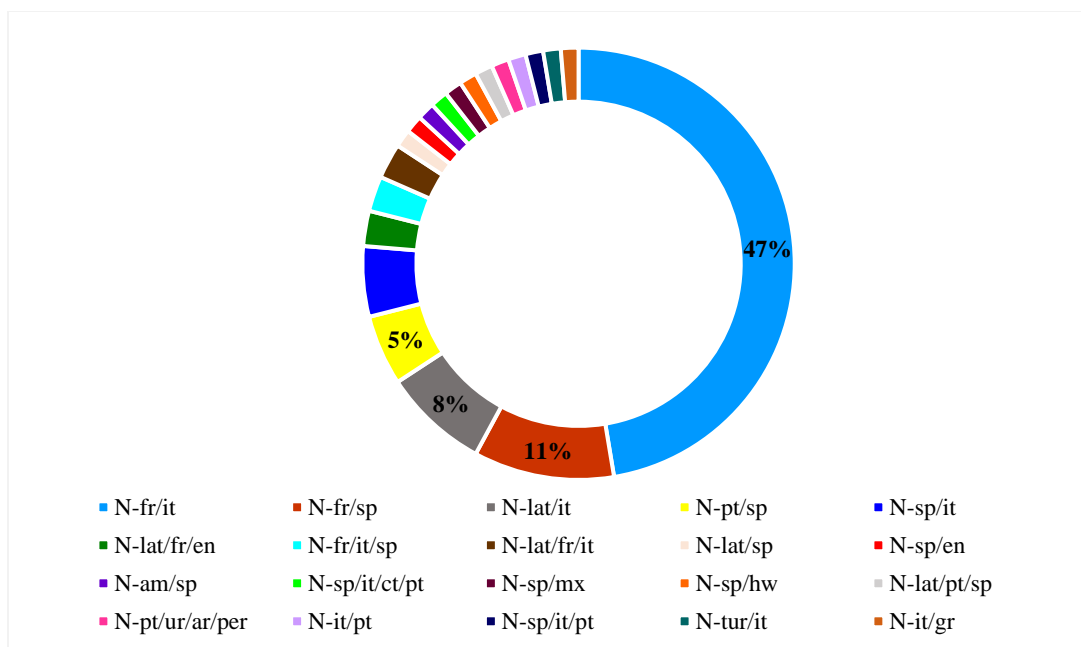


Figure 1. Dual routes with the involvement of the Romance languages

Table 2. Germanic languages: dual routes.

Dual route	Frequency	Dual route	Frequency
N-dt/grl	24	N-lat/fr/dt	1
N-dt/fr	8	N-dt/fr/en	1
N-gr/dt	4	N-sc/dt/grl	1
N-lat/gr	3	N-sw/grl/dt	1
N-grm/sc	3	N-grm/dt/grl/gr/ic/nrw/sw/dn	1
N-grh	3	N-fr/dt/sc	1
N-dt/fl	2	N-fr/dt/afr	1
N-dt/lat	2	N-fr/sp/pt/dt/nrw	1
N-sc/nrn	1	N-fr/sc	1
N-fr/gr	1	N-fl/grl	1
N-grm/dt	1	N-fr/lat/gr	1
N-grm/fr	1	N-dt/grm/grl	1
N-sw/dn	1	N-grm/en	1
N-dt/grh	1	N-lat/grm	1
N-dt/pt	1	N-fr/sw	1

Table 3. Dual routes with the involvement of conversion.

No	Morphological patterns	Frequency	%
1	N-fr_CN	45	53.57
2	N_CN/SRT	10	11.9
3	N_CN/AL	10	11.9
4	N-sc_CN	5	5.95
5	N_S/CN	3	3.57
6	N-lat_CN	2	2.38
7	N_CN/V	2	2.38
8	N_CN/A	1	1.19
9	N-it_CN	1	1.19
10	N-grm_CN	1	1.19
11	N-gr_CN	1	1.19
12	N_E/CN	1	1.19
13	N-dt_CN	1	1.19
14	N-lat/fr_CN	1	1.19

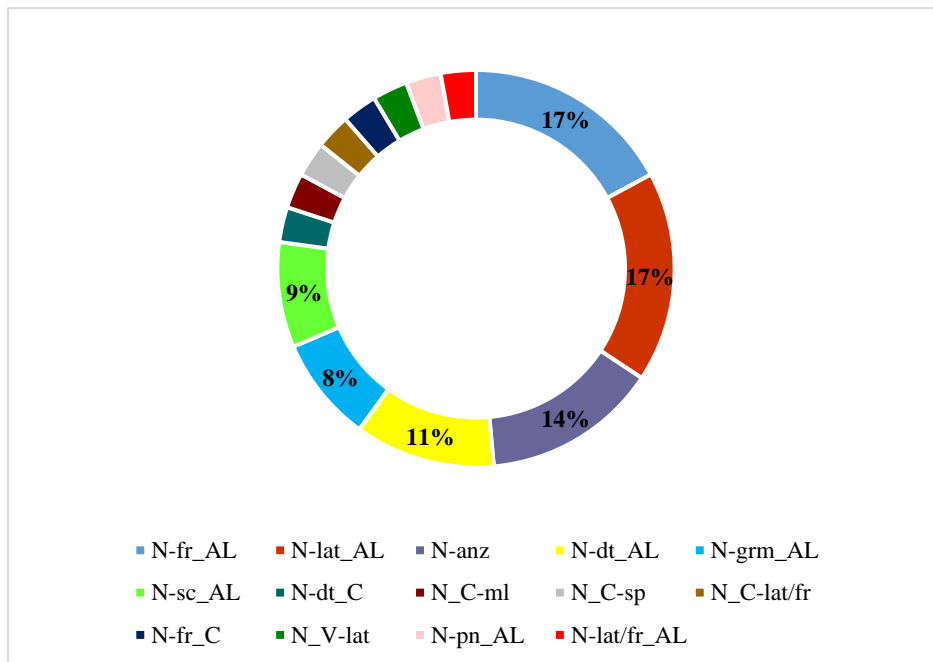


Figure 2. Dual routes with the involvement of phonological changes

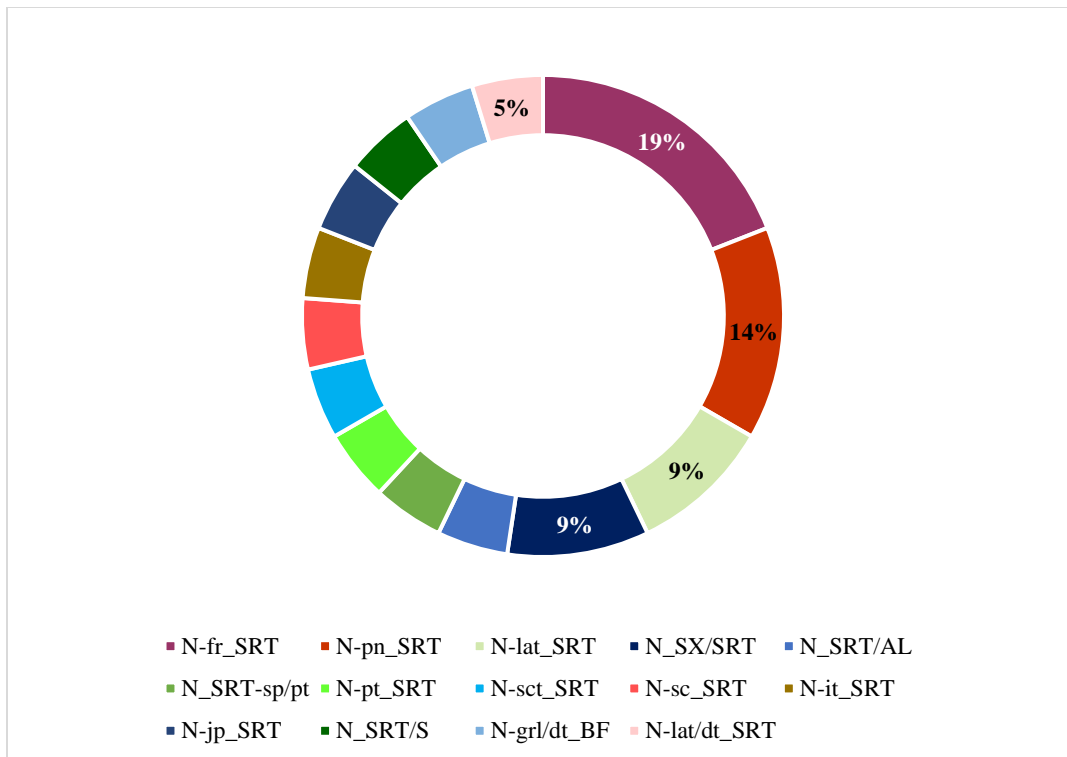


Figure 3. Dual routes with the involvement of contraction

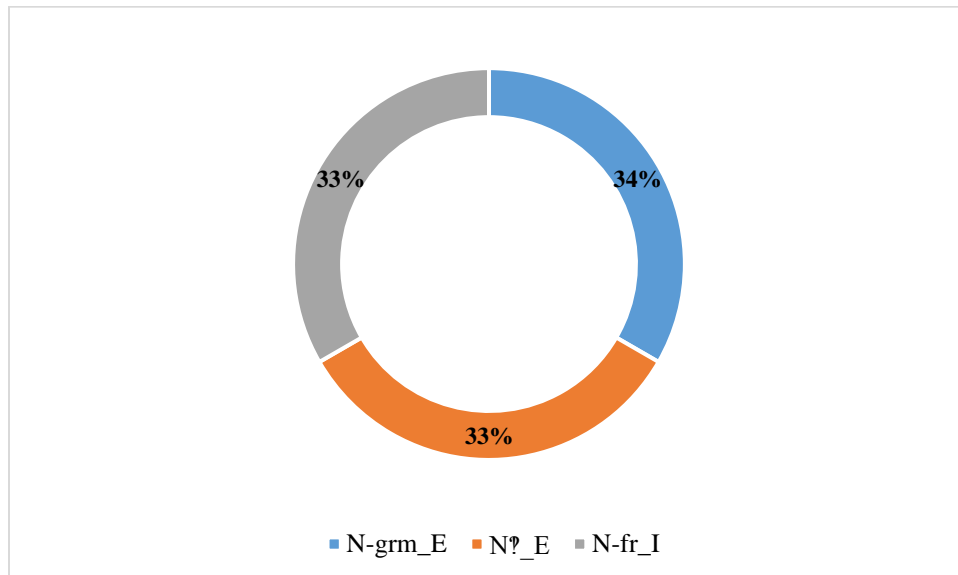


Figure 4. Dual routes with the involvement of onomatopoeia

Appendix B. Simple verbs

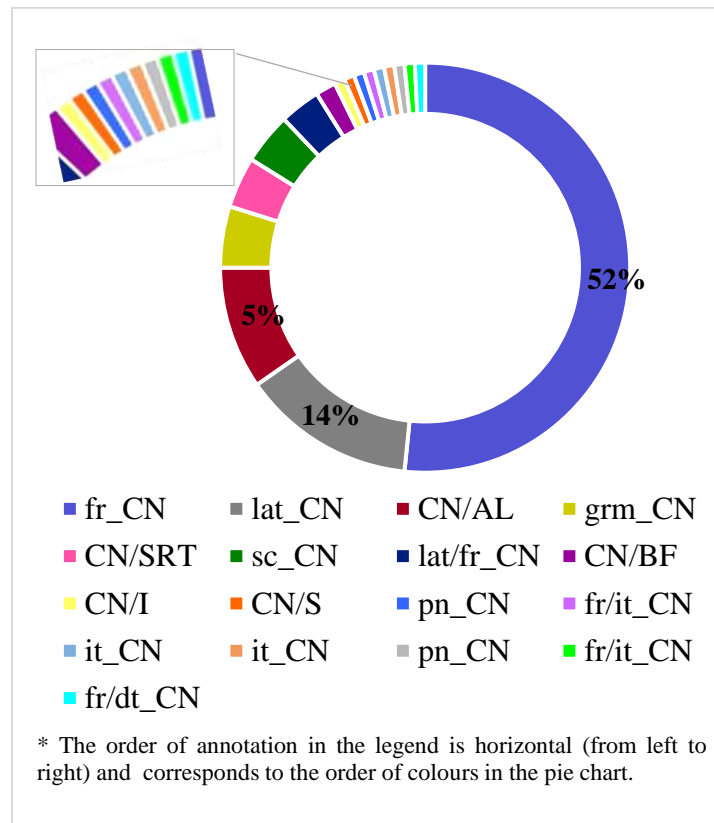


Figure 5. Dual routes for simple verbs with the involvement of conversion

Among the dual routes with conversion, the most productive dual/triple-route formations include (Figure 5) conversion and borrowing from French (52%), conversion and borrowing from Latin (14%), conversion and phonological alternation (10%), conversion and borrowing from Germanic (5%), conversion and contraction (4%), conversion and borrowing from Scandinavian (4%), and conversion and borrowing from Latin and French (3%).

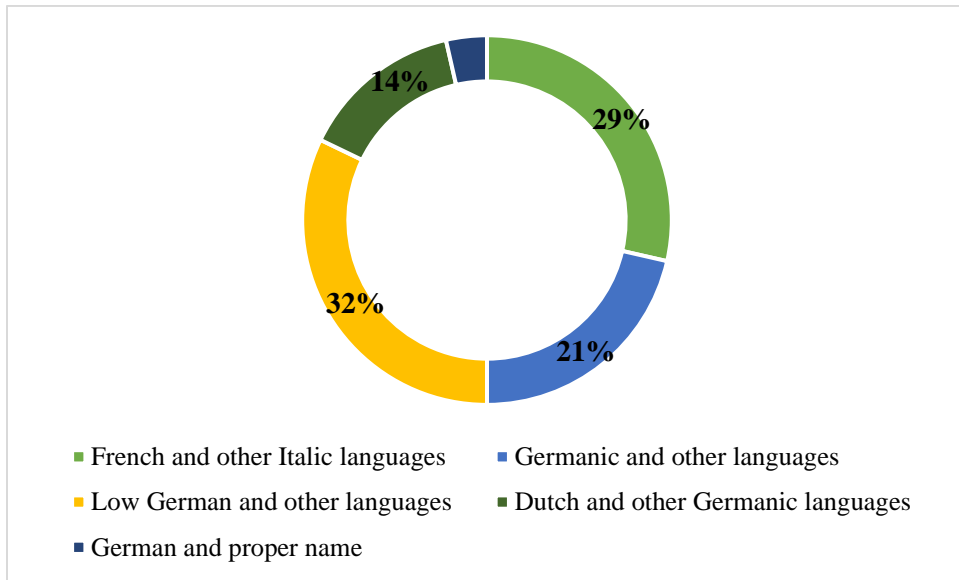


Figure 6. Dual routes for loan verbs

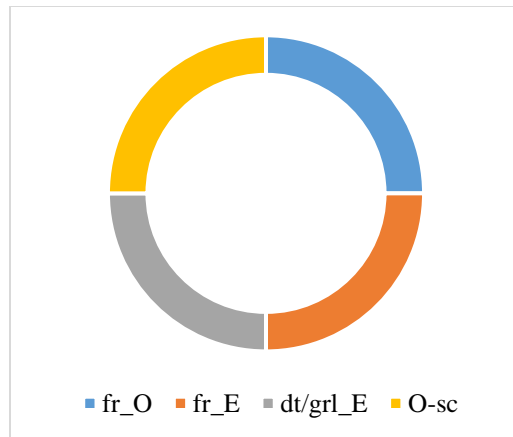


Figure 7. Dual routes with the involvement of onomatopoeia

The dual routes in the category of onomatopoeic verbs include onomatopoeia or expressive formations and borrowings from French, onomatopoeia and borrowings from Dutch/Low German, and onomatopoeia and borrowings from Scandinavian.

In the category of dual routes with the involvement of phonology, the most frequent dual routes are phonological alternations and borrowings from French, as well as apheresis and borrowings from French (Figure 8).

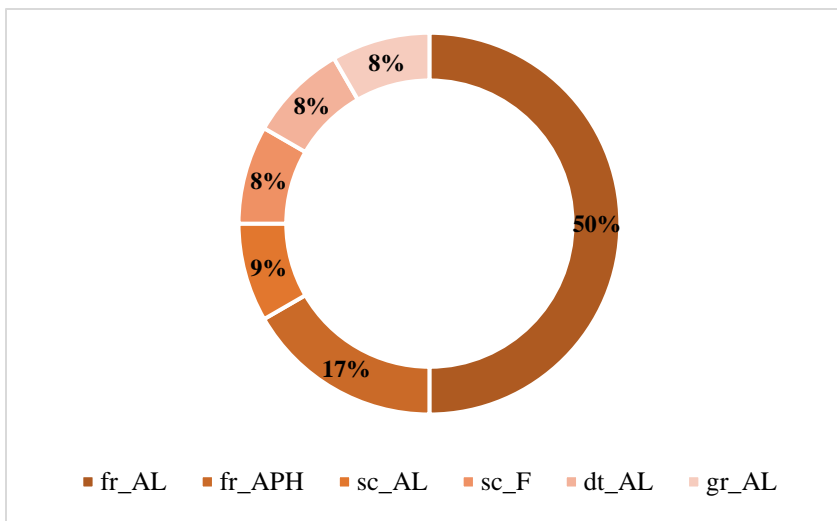


Figure 8. Dual routes with the involvement of phonology

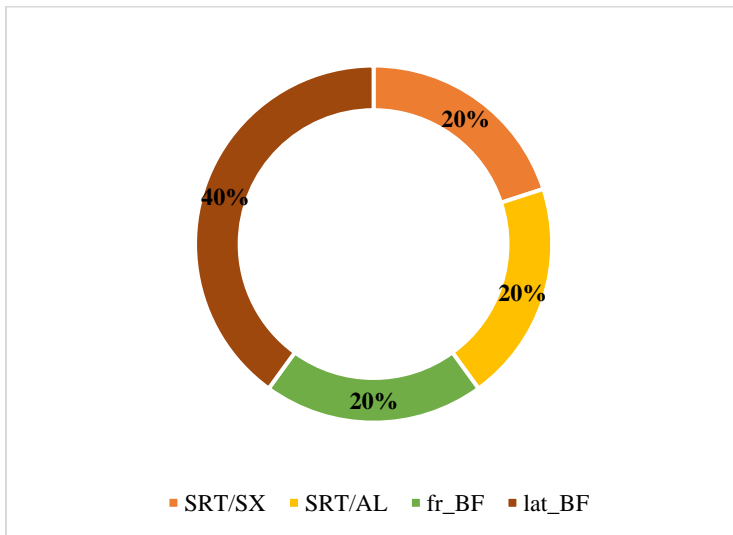


Figure 9. Dual routes with the involvement of contraction

Appendix C. Simple adjectives

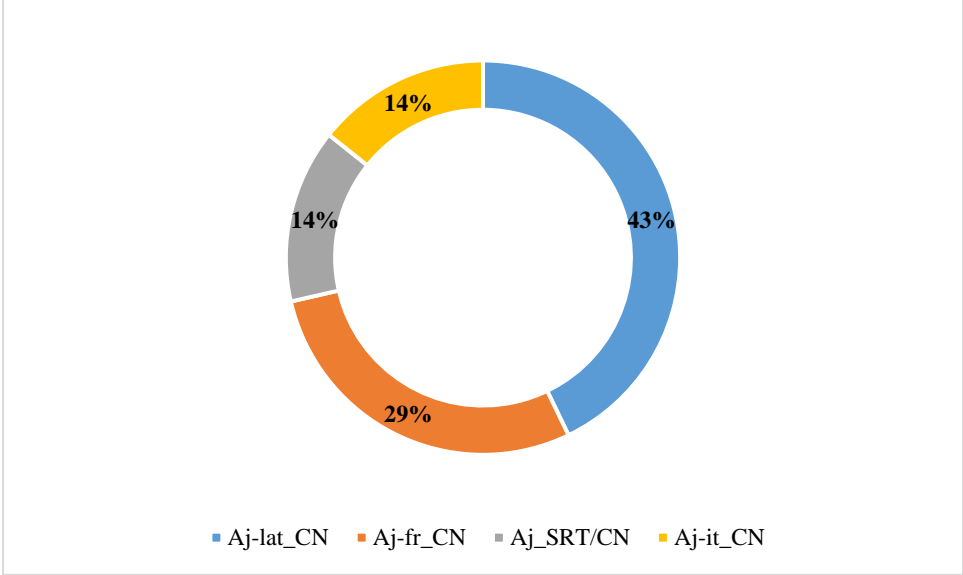


Figure 10. Dual routes for adjectives with the involvement of conversion

Appendix D. Simple and multimorphemic conversive classes

Table 4. The other origins of words in the conversive class N/Aj

No	Origin	Type frequency
1	Italian	19
2	Greek	17
3	Semantic formations	11
4	Spanish	10
5	Anglo-Norman	7
6	Slavic	7
7	Arabic	5
8	Portuguese	4
9	Celtic	3
10	Onomatopoeia	2
11	Yiddish	1
12	Hebrew	1
13	Tongan	1
14	Tai	1
15	Yupic	1
16	Ojibwe	1
17	Marathi	1
18	Hindi	1
19	Urdu	1
20	Romani	1

Appendix E. The type frequency of morphological constructions

Table 5. Morphological constructions in the first level of analysis (type frequency above 20)
(CC stands for a conversive class)

No	Morph. construction	Type fr.	Type val. (without CC)	Type val. (with CC)	Orthographical/Morphonological changes
1	{C+er}	896	4	6	éé, :g, :p, :t, :(y→i), :n, :m, :b, :r, :d, :l, éitis, ment, ée, (i), :(ard→er), (y), :(ss→z)
2	{C+ing}	886	5	6	éé, :g, :p, :t, :l, :d, :n, :m, :b, :r, :(ie→y), (k)
3	{C+C}	689	NA	NA	NA
4	{C+ness}	221	5	8	éion, ée, ése, yéc, éo, :(y→i), :(s→t), éte, éot, :(by→be)
5	{CC}	174	NA	NA	NA
6	{C+ism}	122	4	6	éé, éa, éy, (t), éive,
7	{C+ment}	112	3	4	éé, :(y→i)
8	{C+ist}	90	4	5	éy, ée, éo, éism, (t), :l, (n), éee
9	{C+age}	86	5	6	éé, :g, :p
10	{C+ity}	81	4	6	éé, éa, éal, éous, éble, (il), (ic), éle
11	{C+ion}	81	4	4	éé, (at), éive, (apt), (at), (icat), éic, éy, (ficat), (izat), éum, (ificat), éo, (t)
12	{C+y}	59	4	4	éé, :d, :m, :t, :g, :b, :p, :n, it is, :(b→m)
13	{C+or}	51	2	2	éé, :t, :l, :(d→t)
14	{C+ship}	44	2	2	0
15	{C+ee}	44	4	4	éé, :t
16	{C+ery}	34	4	5	éé, :b, :t, :l, éer
17	{re+C}	31	3	3	0
18	{C+ance}	30	4	4	:t, :d, :(y→i), éé, (éé)r, éant
19	{C+al}	28	2	2	éé, :t, :(y→i)
20	{dis+C}	22	1	1	0
21	{C+ess}	22	2	2	(éo)r, ée
22	{C,ph+C,ph}	22	NA	NA	NA

Table 6. Morphological noun constructions with the type frequencies 2-20 (first level)

No	Morph. construction	Type fr.	Type val. (without CC)	Type val. (with CC)	Orthographical/Phonological changes
1	{C.ph+C.ph}	21	NA	NA	NA
2	{mis+C}	17	1	1	0
3	{fore+C}	16	1	3	0
4	{C+ence}	16	4	4	çency, çent
5	{sub+C}	15	1	1	0
6	{C+dom}	15	1	2	çe
7	{C+et}	15	3	3	0
8	{C+ency}	15	3	3	çe, çent, çt, çence
9	{C+s}	15	3	3	0
10	{C+le}	15	3	4	:(se→zz), :d, :b, çe, :t
11	{C+hood}	14	2	2	:(y→i)
12	{C+ie}	14	3	4	çe, :g
13	{C+ry}	13	2	2	0
14	{C+cy/acy}	13	3	3	çate, çe
15	{C+ful}	12	1	1	0
16	{C+let}	12	2	2	:p
17	{counter+C}	10	1	1	0
18	{C+ancy}	10	4	4	çant
19	{C+ian}	10	3	3	çy, (ic)
20	{C+eer}	9	1	1	çe
21	{in+C}	9	2	2	0
22	{C_SX}	8	NA	NA	NA
23	{un+C}	8	1	1	0
24	{C+ling}	8	2	3	linçg
25	{C+ure}	8	3	2	çe
26	{C+ate}	8	3	3	0
27	{C+s}pl	7	3	3	:n, :(y→ie)
28	{C+ant}	7	2	2	çe
29	{up+C}	6	1	1	0
30	{C+in}	6	3	3	çe
31	{C+th}	6	3	3	çe
32	{C+ine}	6	3	3	0
33	{C+ster}	6	3	4	:r, (i)
34	{semi+C}	5	1	1	0
35	{super+C}	5	1	1	0
36	{C+ette}	5	2	2	0
37	{inter+C}	5	1	1	0
38	{C+o}	5	3	3	:b
39	{anti+C}	5	2	2	0
40	{C+ium}	5	2	2	(ar), (n), çe
41	{co+C}	4	1	1	0
42	{de+C}	4	1	1	0
43	{C_RD}	3	NA	NA	NA
44	{C_AL}	3	NA	NA	ol, le, et
45	{mal+C}	3	1	1	0
46	{self+C}	3	1	1	0
47	{C+ide}	3	1	1	(c)
48	{non+C}	3	2	2	0
49	{on+C}	3	2	2	0
50	{C+itis}	3	1	1	çi, :l
51	{C+ary}	2	1	1	çar
52	{C+ite}	2	1	1	0
53	{over+C}	2	1	1	0
54	{para+C}	2	1	1	0
55	{ultra+C}	2	1	1	0

56	{C+ar}	2	1	1	:g
57	{C+ard}	2	2	2	:lɛe
58	{C+ock}	2	1	1	:d
59	{Cɛa+t}	2	1	1	ɛis, ɛsus
60	{C+on}	2	1	1	0
61	{C+ese}	2	1	1	0
62	{C+ia}	2	2	2	(aem)

Table 7. Morphological noun hapaxes (first level)

No	Morph. construction	Type fr.	Type val. (without CC)	Type val. (with CC)	Orthographical /Phonological changes
1	{C+ty}	1	1	1	0
2	{con+C}	1	1	1	0
3	{ac+C}	1	1	1	0
4	{C+end}	1	1	1	ɛe
5	{after+C}	1	1	1	0
6	{arch+C}	1	1	1	0
7	{C+ade}	1	1	1	0
8	{C+cade}	1	1	1	0
9	{C+ina}	1	1	1	0
10	{C+t}	1	1	1	(ve→f)
11	{contra+C}	1	1	1	0
12	{C+our}	1	1	1	0
13	{en+C}	1	1	1	0
14	{C+ome}	1	1	1	ɛe
15	{C+red}	1	1	1	0
16	{im+C}	1	1	1	0
17	{infra+C}	1	1	1	0
18	{C+ac}	1	1	1	0
19	{C+aholic}	1	1	1	0
20	{C+i}	1	1	1	0
21	{C+el}	1	1	1	0
22	{C+eme}	1	1	1	0
23	{C+kin}	1	1	1	0
24	{C+ory}	1	1	1	0
25	{out+C}	1	1	1	0
26	{peri+C}	1	1	1	0
27	{C+sy}	1	1	1	0
28	{C+il}	1	1	1	0
29	{C+eroo}	1	1	1	0
30	{sur+C}	1	1	1	0
31	{trans+C}	1	1	1	0
32	{C+yl}	1	1	1	0
33	{C+lock}	1	1	1	0
34	{C+wards}	1	1	1	0
35	{C+ol}	1	1	1	0
36	{C+osis}	1	1	1	ɛe
37	{C+one}	1	1	1	0
38	{C+oid}	1	1	1	0

Table 8. Morphological constructions for nouns with the type frequency above 20 (second level)

No	Morphological construction	Type frequency	Type valency (without CC)	Type valency (with CC)	Orthographical/Morphological changes
1	{C+C}"	143	NA	NA	NA
2	{C+ness}"	100	2	5	:(y→i)
3	{C+er}"	77	3	5	çe, :p, :l
4	{C+ing}"	59	2	3	çe, inçg
5	{C+ity}"	52	1	1	çle, (il), çe
6	{C+ion}"	29	1	1	çe, (at)
7	{C+ment}"	21	1	1	0
8	{C+ism}"	20	2	2	:(y→i)

Table 9. Morphological constructions with the type frequencies 2-10 (second level)

No	Morph. construction	Type fr.	Type val. (without CC)	Type val. (with CC)	Orthographical/Phonological changes
1	{de+C}"	10	2	2	(at)
2	{C+ist}"	10	3	3	çy, çe
3	{C+ship}"	8	1	1	0
4	{re+N}"	7	2	2	0
5	{C+y}"	6	1	1	0
6	{un+N}"	5	1	1	0
7	{C+s}"	5	1	1	0
8	{C+ess}"	5	2	2	0
9	{co+N}"	4	1	1	0
10	{on+C}"	4	1	1	0
11	{C+hood}"	4	2	2	:(y→i)
12	{up+C}"	4	2	2	0
13	{C+ery/ry}"	4	2	2	çe
14	{C+ance}"	3	1	1	0
15	{C+al}"	3	1	1	çe
16	{C+dom}"	2	1	1	0
17	{C+acy}"	2	1	1	çate
18	{C+or}"	2	1	1	çe
19	{mal+C}"	2	1	1	0
20	{in+C}"	2	1	1	0
21	{mis+C}"	2	1	1	0
22	{C+ian}"	2	1	1	0
23	{anti+C}"	2	2	2	0
24	{C+s}pl"	2	2	2	:(y→i), çe

Table 10. Morphological noun hapaxes (second level)

No	Morph. construction	Type fr.	Type val. (without CC)	Type val. (with CC)	Orthographical/P honological changes
1	{C+ency}"	1	1	1	0
2	{contra+C}"	1	1	1	0
3	{dis+C}"	1	1	1	0
4	SX	1	1	1	0
5	{C+ine}"	1	1	1	0
6	{C+ite}"	1	1	1	0
7	{C+ia}"	1	1	1	0
8	{C+on}"	1	1	1	0
9	{con+C}"	1	1	1	(at)
10	{sub+C}"	1	1	1	0
11	{C+age}"	1	1	1	0
12	{C+a}"	1	1	1	0

Table 11. Morphological constructions for nouns, including hapaxes (third level)

No	Morphological construction	Type frequency	Type valency (without CC)	Type valency (with CC)	Orthographical/ Morphological changes
1	{C+ness}"	6	1	1	:(y→i)
2	{C+ion}"	6	3	3	çe, (at), izçe
3	{C+C}"	5	1	1	0
4	{C+ment}"	4	1	1	0
5	{C+er}"	4	1	1	çe
6	{C+ing}"	3	1	1	çe
7	{C+ity}"	2	1	1	çle, (il)
8	{de+C}"	2	2	2	(izat)
9	{C+s}"	1	1	1	0
10	{C+ship}"	1	1	1	0
11	{C+ism}"	1	1	1	(izat)

Table 12. Morphological constructions for verbs, excluding hapaxes (first level)

No	Morph. Construction	Type fr.	Type val. (without CC)	Type val. (with CC)	Orthographical/Morphonological changes
1	{C+ize/ise/yse}	131	4	5	çe, çy, çs, çysie, :l, çism, çist
2	{re+C}	122	4	5	0
3	{C+en}	66	5	6	:t, :d, çe
4	{un+C}	40	2	3	0
5	{C+le}	39	3	4	:g, çe, :b, :p, lçe, (d), (t), :(u→i)b, :(se→zz), (ça):t, :d
6	{C+C}	38	NA	NA	0
7	{mis+C}	33	1	1	0
8	{de+C}	28	2	3	proç
9	{dis+C}	27	2	2	0
10	{C+ate}	26	4	4	ça, çe, çal, çum
11	{en+C}	22	3	4	0
12	{C+er}	18	3	3	:t, :g, çe, (t)
13	{out+C}	15	2	2	0
14	{C+ify}	11	4	4	:(y→i), (i), çe, :(e→i), çy, çcate
15	{pre+C}	10	1	1	0
16	{up+C}	10	1	1	0
17	{be+C}	7	2	2	0
18	{under+C}	7	1	1	0
19	{over+C}	6	1	1	0
20	{counter+C}	6	1	1	0
21	{a2+C}	5	2	2	0
22	{im+C}	5	3	3	0
23	{mal+C}	4	1	1	0
24	{sub+C}	4	1	1	0
25	{co+C}	4	2	2	0
26	{per+C}	3	2	2	0
27	{C+eer}	2	2	2	0
28	{C.ph+C.ph}	2	NA	NA	NA

Table 13. Morphological verbal hapaxes (first level)

No	Morph. construction	Type fr.	Type val. (without CC)	Type val. (with CC)	Orthographical/P honological changes
1	{a+C}	1	1	1	p:
2	{C+ic}	1	1	1	0
3	{C+ish}	1	1	1	çe
4	{C+age}	1	1	1	0
5	{with+C}	1	1	1	0

Table 14. The morphological constructions for verbs, including hapaxes (second level)

No	Morphological construction	Type frequency	Type valency (without CC)	Type valency (with CC)	Orthographical/Morphonological changes
1	{C+ize}"	17	2	2	çe
2	{de+C}"	10	4	4	0
3	{re+C}"	3	3	3	0
4	{en+C}"	2	2	2	0
5	{ac+C}"	1	1	1	0
6	{dis+C}"	1	1	1	0
7	{im+C}"	1	1	1	0
8	{C+ate}"	1	1	1	çy
9	{self+C}"	1	1	1	0
10	{C+er}"	1	1	1	0

Table 15. Morphological adjectival constructions with the frequency above 20 (first level)

No	Morphological construction	Type frequency	Type valency (without CC)	Type valency (with CC)	Orthographical/Morphonological changes
1	{C+ed}	1654	4	8	çe, :(y→i), :d, :b, :t, :n, :g, :p, :l, (çe)d, (at), (k)
2	{C+ing}	647	3	4	çe, :p, :t, :l, :g, :n, :(ie→y), :m, :b, :d, :r, çy, çer, :t
3	{C+able}	330	4	5	çe, :(y→i), :t, :m, :l, :d, ça, çy, çe,çate
4	{C+y}	289	6	8	:g, :r, :t, :p, :b, :n, :m, çes, (çer), it is, çh
5	{C+al}	231	3	3	çe, ça, çy, ço, çum, (i), (ic), :(y→i), :z, (al), (u)
6	{C+less}	173	4	5	0
7	{C+ful}	111	4	6	:(y→i)
8	{C+C}	94	NA	NA	çe
9	{C+ive}	70	4	4	çe, (at), çy
10	{C+ous}	66	4	4	(i), çon, :(y→i), çnator, çe, ça, (çer), çus, çy, :l
11	{un+C}	60	1	1	0
12	{C+ic}	60	4	4	çe, çy, ça, çia, (et), (ol), (ist), (ot), çate
13	{C+ish}	58	4	7	:b, :g, :n, çe
14	{C+ly}	45	3	3	çe, :(y→i)
15	{in+C}	28	2	4	0

Table 16. Morphological constructions for adjectives with the frequencies 2-20 (first level)

No	Morph. construction	Type fr.	Type val. (without CC)	Type val. (with CC)	Orthographical /Morphological changes
1	{C+some}	17	3	5	:(y→i)
2	{C+ory}	12	2	2	çe
3	{C+ary}	10	2	2	çe
4	{im+C}	8	1	3	
5	{C+ent/ant}	8	2	2	0
6	{dis+C}	7	1	1	0
7	{anti+C}	6	2	2	0
8	{up+C}	5	1	1	0
9	{C+ar}	5	2	2	çe
10	{C+en}	4	1	1	0
11	{C+most}	4	2	2	0
12	{non+C}	4	2	2	
13	{a2+C}	4	2	2	0
14	{C+an}	4	1	1	ça, çus, çî
15	{sub+C}	3	1	1	0
16	{re+C}	3	1	1	0
17	{a+C}	3	2	2	:(of→a), (f→ve)
18	{C+ate}	3	3	3	çe
19	{C+er}	3	3	3	(k)
20	{ir+C}	2	1	1	0
21	{mis+C}	2	1	1	0
22	{pre+C}	2	1	1	0
23	{semi+C}	2	1	1	0
24	{sub+C}	2	1	1	0
25	{ante+C}	2	2	2	0
26	{C+en}	2	2	2	0
27	{counter+C}	2	1	1	0
28	{ex+N}	2	2	2	0
29	{intra+C}	2	2	2	0
30	{per+C}	2	1	1	0
31	{pro+C}	2	2	2	0

Table 17. Morphological adjectival hapaxes (first level)

No	Morph. construction	Type fr.	Type val. (without CC)	Type val. (with CC)	Orthographical /Phonological changes
1	Abbr	1	NA	NA	0
2	{C.ph+C.ph}	1	NA	NA	0
3	{ab+C}	1	1	1	0
4	{ad+C}	1	1	1	0
5	{C+id}	1	1	1	0
6	{C+le}	1	1	1	0
7	{de+C}	1	1	1	0
8	{extra+C}	1	1	1	0
9	{fore+C}	1	1	1	0
10	{il+C}	1	1	1	0
11	{over+C}	1	1	1	0
12	{self+C}	1	1	1	0
13	{semi+C}	1	1	1	0
14	{C+esque}	1	1	1	0
15	{C+sy}	1	1	1	0
16	{ultra+C}	1	1	1	0
17	{C+like}	1	1	1	0

Table 18. Adjectival morphological constructions (second level)

No	Morphological construction	Type frequency	Type valency (without CC)	Type valency (with CC)	Orthographical/Morphonological changes
1	{un+C}”	162	1	1	0
2	{C+ed}”	86	3	4	çe, :(y→i), :n, (atçe), izçe, (iz)
3	{C+C}”	84	NA	NA	0
4	{C+ing}”	51	2	3	çe, çle
5	{C+ic}”	20	1	1	0
6	{C+al}”	17	2	2	(i)
7	{in+C}”	15	2	2	0
8	{C+able}”	6	2	2	çe, :(y→i)

Table 19. Morphological constructions for adjectives with the frequencies 2-5 (second level)

No	Morph. construction	Type fr.	Type val. (without CC)	Type val. (with CC)	Orthographical /Morphonological changes
1	{C+less}"	5	1	1	0
2	{over+C}"	5	1	1	0
3	{C+ful}"	4	2	2	0
4	{non+C}"	4	2	2	0
5	{pre+C}"	4	1	1	0
6	{re+C}"	4	1	1	0
7	{on+C}"	4	1	1	0
8	{C+y}"	4	2	2	0
9	{ir+C}"	4	1	1	0
10	{im+C}"	3	1	1	0
11	{self+C}"	3	1	1	0
12	{up+C}"	3	1	1	0
13	{anti+C}"	3	2	2	0
14	{de+C}"	3	2	2	0
15	{il+C}"	3	1	1	0
16	{mis+C}"	3	1	1	0
17	{C+ive}"	3	1	1	çe
18	{a2+C}"	2	1	1	0
19	{C+ish}"	2	1	1	0
20	{mal+C}"	2	1	1	0
21	{co+C}"	2	1	1	0
22	{extra+C}"	2	1	1	0
23	{inter+C}"	2	1	1	0
24	SX	2	NA	NA	0

Table 20. Morphological adjectival hapaxes (second level)

No	Morph. construction	Type fr.	Type val. (without CC)	Type val. (with CC)	Orthographical /Phonological changes
1	{afore+C}"	1	1	1	0
2	{C+ous}"	1	1	1	0
3	{C+er}"	1	1	1	:(y→i)
4	{C+ar}"	1	1	1	çe
5	{C+ly}"	1	1	1	0
6	{C+ary}"	1	1	1	0
7	{be+C}"	1	1	1	çe

Table 21. Adjectival morphological constructions, including hapaxes (third level)

No	Morphological construction	Type frequency	Type valency (without CC)	Type valency (with CC)	Orthographical/ Morphonological changes
1	{C+C}	6	NA	NA	0
2	{C+ed}	3	1	1	çe
3	{C+ing}	3	1	1	çe
4	{un+C}	3	1	1	0
5	{C+al}	1	1	1	0
6	{non+C}	1	1	1	0

Table 22. Adverbial morphological constructions, including hapaxes (first level)

No	Morphological construction	Type frequency	Type valency (without CC)	Type valency (with CC)	Orthographical/ Morphological changes
1	{C+ly}	579	6	7	∅le, :(y→i), ∅l
2	{C+C}	13	3	3	∅l
3	{a+C}	9	3	3	:(of→a), :(on→a)
4	{un+C}	3	2	3	0
5	{C+wise}	1	1	1	0
6	{C+ish}	1	1	1	0
7	{up+C}	1	1	1	0
8	{C+er}	1	1	1	0
9	{CC}	1	1	1	0

Table 23. Morphological adverbial constructions, including hapaxes (second level)

No	Morphological construction	Type frequency	Type valency (without CC)	Type valency (with CC)	Orthographical/ Morphological changes
1	{C+ly}”	303	3	3	∅le, (y→i), (al)
2	{un+C}”	9	2	2	0
3	{C+C}”	3	NA	NA	0
4	{C+s}”	3	2	2	0
5	{C+ward}”	1	1	1	0

Table 24. Adverbial morphological constructions, including hapaxes (third level)

No	Morphological construction	Type frequency	Type valency (without CC)	Type valency (with CC)	Orthographical/ Morphological changes
1	{C+ly}””	27	2	2	∅le, (al)
2	{in+C}””	1	1	1	0

Table 25. Nouns/adjectives morphological constructions with the frequency above 20 (first level)

No	Morphological construction	Type frequency	Type valency (without CC)	Type valency (with CC)	Orthographical/Morphonological changes
1	{C+C}	110	NA	NA	ϕe, ϕty,
2	{C+al}	103	4	5	(ic), (i), (u), ϕy, it is, ϕce, (ti),:(y→i)
3	{C+ed}	61	3	4	ϕe, :t, :(y→i), (ϕe)d
4	{C+an}	54	3	4	ϕa, ϕe, (i), ϕo, ϕum, ϕy, :b, it is, (ar),
5	{C+y}	47	3	5	ϕe, :t, :g, :p, :d, :s, :n,
6	{C+ist}	34	2	2	0
7	{C+able/ble}	32	3	4	ϕe, :(y→i), :(e→i)
8	{C+ive}	26	2	2	ϕe
9	{C+ist}	24	4	6	ϕe, ϕy, ϕa
10	{C+ic}	20	2	2	ϕia, ϕa, ϕy, (ahol), (ohol, ϕlate, (ot)

Table 26. Morphological nominal/adjectival constructions with the type frequency 2-20 (first level)

No	Morph. construction	Type fr.	Type val. (without CC)	Type val. (with CC)	Orthographical/Phonological changes
1	{C+ly}	16	3	3	:(y→i)
2	{in+C}	16	2	4	0
3	{C+ery/ry/ary}	15	3	4	ɛee
4	{un+C}	14	1	1	0
5	{C+ish}	13	4	4	ɛk, (ish→ch), ɛe, :d
6	{C+less}	12	1	1	:(y→i)
7	{C+ant/ent}	9	2	2	ɛe)r, :(y→i), ɛence
8	{C+ful}	8	1	1	0
9	{non+C}	6	2	2	0
10	{C+ese}	6	1	1	ɛa
11	{C+ie}	6	3	3	:p
12	{sub+C}	5	2	2	0
13	{anti+C}	5	4	4	0
14	{C+o}	4	3	3	0
15	{C+ee}	3	2	2	0
16	{C+ar}	3	2	2	ɛe
17	{dis+C}	3	1	2	0
18	{C+en}	3	2	2	0
19	RD	3	NA	NA	0
20	{para+C}	3	1	1	0
21	{C+s}	3	1	1	0
22	{C+ine}	3	2	2	0
23	{im+C}	3	2	3	0
24	{up+C}	2	1	1	0
25	{C+ory}	2	1	1	ɛe
26	{C+some}	2	1	1	0
27	{pre+C}	2	1	1	0
28	{a+C}	2	2	2	0
29	{C+er}	2	2	2	0
30	{C+ling}	2	2	2	0
31	{intra+C}	2	2	2	0
32	{C+et}	2	1	1	ɛe
33	{pre+C}	2	1	1	0
34	{C+oid}	2	2	2	ɛus
35	{trans+C}	2	1	2	0
36	{CC}	2	1	1	0

Table 27. Morphological nominal/adjectival hapaxes (first level)

No	Morph. construction	Type fr.	Type val. (without CC)	Type val. (with CC)	Orthographical/Phonological changes
1	{C+eer}	1	1	1	0
2	{C+ate}	1	1	1	0
3	{C+ock}	1	1	1	0
4	{de+C}	1	1	1	0
5	{C+ern}	1	1	1	0
6	{infra+C}	1	1	1	0
7	{C+most}	1	1	1	0
8	{inter+C}	1	1	1	0
9	{ir+C}	1	1	1	0
10	{C+rel}	1	1	1	0
11	{C+red}	1	1	1	0
12	{C+th}	1	1	1	0
13	{mis+C}	1	1	1	0
14	{C+hood}	1	1	1	0
15	{C+i}	1	1	1	0
16	{pene+C}	1	1	1	pençe
17	{per+C}	1	1	1	0
18	{C+esque}	1	1	1	çe
19	{post+C}	1	1	1	0
20	{ultra+C}	1	1	1	0
21	AL.m	1	1	1	0

Table 28. Nominal/adjectival morphological constructions with the type frequency 2-20 (second level)

No	Morphological construction	Type frequency	Type valency (without CC)	Type valency (with CC)	Orthographical/Morphonological changes
1	{un+C}”	20	1	1	0
2	{C+C}”	15	NA	NA	0
3	{C+ic}”	5	1	1	0
4	{C+ist}”	4	2	2	0
5	{C+ed}”	4	1	1	çe, :(y→i)
6	{in+C}”	3	1	1	0
7	{C_SX}	3	NA	NA	0
8	{non+C}”	3	2	2	0
9	{C+al}”	3	1	1	çy, çe
10	{ir+C}”	2	1	1	0
11	{C+able}”	2	1	1	0
12	{C+ing}”	2	1	1	:p, çe

Table 29. Morphological nominal/adjectival hapaxes (second level)

No	Morph. construction	Type fr.	Type val. (without CC)	Type val. (with CC)	Orthographical/Morphological changes
1	{C+y}"	1	1	1	0
2	{con+C}"	1	1	1	0
3	{contra+C}"	1	1	1	0
4	{C+ive}"	1	1	1	0
5	{C+ly}"	1	1	1	0
6	{dis+C}"	1	1	1	0
7	{C+ary}"	1	1	1	çal

Table 30. Adjectival/adverbial morphological constructions, excluding hapaxes (first level)

No	Morphological construction	Type frequency	Type valency (without CC)	Type valency (with CC)	Orthographical/Morphological changes
1	{C+less}	12	2	2	0
2	{C+ing}	10	1	1	çe
3	{C+ly}	9	2	4	:(y→i)
4	{C+ful}	8	1	1	çe, :(y→i)
5	{a+C}	8	2	2	(on→a)
6	{C+y}	7	2	3	çe
7	{C+C}	7	NA	NA	0
8	{un+C}	5	1	1	0
9	{C+ish}	4	3	3	0
10	{C+ous}	3	2	2	0
11	{in+C}	2	1	1	0

Table 31. Morphological adjectival/adverbial hapaxes (first level)

No	Morph. construction	Type fr.	Type val. (without CC)	Type val. (with CC)	Orthographical/Phonological changes
1	{C+able}	1	1	1	0
2	{C+some}	1	1	1	0
3	{C+ward}	1	1	1	0
4	{C+ling}	1	1	1	0
5	{C+ed}	1	1	1	:g
6	{C+ary}	1	1	1	0
7	{pre+C}	1	1	1	0
8	{C+fold}	1	1	1	0
9	{C+like}	1	1	1	0
10	C+wise}	1	1	1	0
11	{up+C}	1	1	1	0
12	{ir+C}	1	1	1	0

Table 32. Morphological adjectival/adverbial hapaxes (second level)

No	Morph. construction	Type fr.	Type val. (without CC)	Type val. (with CC)	Orthographical/Morphophonological changes
1	{C+C}"	4	NA	NA	0
2	{anti+C}"	1	1	1	0
3	{un+C}"	3	1	1	0
4	{C+s}"	4	1	1	0

Table 33. Nominal/adjectival/adverbial morphological constructions, excluding hapaxes (first level)

No	Morphological construction	Type frequency	Type valency (without CC)	Type valency (with CC)	Orthographical/Morphological changes
1	{C+C}	23	5	6	çt
2	{C+ward}	8	2	2	aç
3	{C+ful}	6	1	1	:(y→i)
4	{C+y}	5	1	1	:d
5	{C+y}	4	2	2	çe, :n
6	{a+C}	3	2	2	:(on→a)
7	{C+able}	3	2	2	0
8	{C+less}	2	1	1	0
9	{C+ish}	2	2	2	çe
10	{C+ly}	2	1	1	0
11	{C+er}	2	1	1	0
12	{C+ar}	2	2	2	çus
13	{C+ous}	2	1	1	0

Table 34. Morphological nominal/adjectival/adverbial hapaxes (first level)

No	Morph. construction	Type fr.	Type val. (without CC)	Type val. (with CC)	Orthographical/Phonological changes
1	{for+C}	1	1	1	0
2	{C+some}	1	1	1	0
3	{in+C}	1	1	1	0
4	{C+le}	1	1	1	0
5	{non+C}	1	1	1	0
6	{C+ed}	1	1	1	çe
7	{up+C}	1	1	1	0
8	{un+C}	1	1	1	0
9	{for+C}	1	1	1	0

Table 35. Morphological nominal/adjectival/adverbial constructions (second level)

No	Morph. construction	Type fr.	Type val. (without CC)	Type val. (with CC)	Orthographical/Morphophonological changes
1	{un+C}"	2	1	1	0
2	{C+most}"	1	1	1	0
3	{up+C}"	1	1	1	0
4	{C+C}"	3	NA	NA	0

Table 36. Morphological constructions and patterns for other conversive classes

No	Complex conversive class	Morph. construction	Morphological pattern	Type frequency	Orthographical/Morphological changes	
1	Ad/Conj/Prep	{C+t}	Ad/Conj/Prep'=N/Conj/Ad+t	1	0	
2	Ad/Intj	{C+ly}	Ad/Intj'=Aj+ly	1	0	
3	Aj/Intj/N	{C+ly}	Aj/Intj/N'=N+ly	1	0	
4	Aj/Ad/Intj	{super+C}	Aj/Intj/N'=super+Aj	1	0	
		{C+a+C}	Aj/Ad/Intj'=N+a+N	1	0	
5	Aj/Prep	{C+er}	Ad/Aj/Intj'=Aj/Adge+er	1	çe	
			Aj/Prep'=Verb+ing	3	0	
		{C+ing}	Prep/Aj'=BM+ing	1	0	
		{C+C}	Prep/Aj'=Ad+Prep	2	0	
6	Pron/Aj	{C+s}	Pron/Aj'=Pron+s	4	0	
		{C+C}	Aj/Pron'=Aj/Pron+Ad	3	0	
7	Pron/N	{C+C}	Pron/N'=Pron+Pron	2	0	
			N/Pron'=Pron+N	1	0	
			Pron/N'=Part+N	1	0	
8	Ad/Pron	{C+C}	Ad/Pron'=Pron+Conj	1	0	
9	Intj/Verb	{CC}	Intj/Verb-lat=Abbr	1	0	
10	Conj/Aj	{C+ed}	Conj/Aj'=Verbçe+ed	1	çe	
11	Pron/N/Ad/Intj	{C+C}	Pron/N/Ad/Intj'=BM+N	1	0	
			Pron/N/Ad/Intj'=Aj+N	1	0	
12	Ad/Conj/N	{be+C}	Ad/Conj/N'=Prep:(by→be)+N	1	:(by→be)	
13	Aj/Ad/Verb	{a+C}	Aj/Ad/Verb'=Prep:(on→a)+N	1	:(on→a)	
		{an+C}	Aj/Ad/Pron'=an+Pron	1	0	
14	Aj/Ad/Pron	{C+C}	Pron/Aj/Ad'=Pron+Pron	1	0	
		{a+C}	Ad/Prep/Aj/N'=a+N	1	0	
15	N/Aj/Ad/Prep	{be+C}	Ad/Prep/Aj/N'=be+Aj	1	0	
		{C+C}	N/Aj/Ad/Prep'=Prep+N	3	0	
16	N/Aj/Ad/Prep/Conj	{C+ward}	Ad/Prep/Aj/Conj/N'=Ad+ward	1	0	
17	N/Ad/Prep/Conj	{C+t}	Prep/Conj/Ad/N'=Prep+t	1	0	
		{C+C}	Ad/Conj/Prep/N'=Prep+Aj	1	0	
18	Aj/Prep/Conj	{C+ing}	Prep/Aj/Conj'=Verbçe+ing	1	çe	
19	Ad/Prep/N	{a+C}	Ad/Prep/N'=Prep:(on→a)+N	1	:(on→a)	
		{be+C}	Ad/Prep/N'=be+BM	1	0	
		{C+s}	Ad/Prep/N''=Prep'+s	1	0	
20	N/Intj	{C+C}	N/Intj'=N+N	2	0	
			N/Intj'=Verb+Ad	1	0	
			Intj/N'=Intj+Intj/N	1	0	
21	N/Ad/Intj	{C+C}	N/Intj/Ad'=N+N	1	0	
			N/Ad/Intj'=Verb+ing	1	0	
			N/Ad/Intj'=N+ing	1	0	
22	N/Aj/Ad/Pron	{C+C}	Pron/N/Aj/Ad'=BM+Pron	1	0	
			Ad/N/Pron/Aj'=Part+Ad/Conj	1	0	
23	Prep/Conj	{C+ing}	Prep/Conj'=Verb+ing	1	0	
			Prep/Conj'=Prep/Conjçe+ing	1	çe	
24	N/Aj/Ad/Intj	{C+ed}	Conj/Prep'=Verbçe+ed	1	çe	
		{C+C}	Intj/N/Aj/Ad'_SX=Verb+Ad	1	0	
25	Ad/Prep	{a+C}	Ad/Prep'=Prep:(on→a)+N	5	:(on→a)	
			Ad/Prep'=Prep+N	1	:(on→a)	
			Ad/Prep'=Prep:(on→a)+N SRT	1	:(on→a)	
			{C+C}	Ad/Prep'=Ad+Ad	1	0
			{C+(s)t}	Ad/Prep'=Prep+t	2	0
		{C+s}	Ad/Prep'=Ad+s	1	0	

26	Aj/Ad/Prep/Intj	{a+C}	Aj/Ad/Prep/Intj'=Prep:(on→a)+N	1	:(on→a)
27	Ad/N	{C+ly}	Ad/N'=Aj+ly	2	0
			Ad/N'=Ajçle+ly	1	çle
			Ad/N'=Num+ly	1	0
		{C+C}	Ad/N'=Prepçf+N/Ad	1	çf
			Ad/N'_SRT=Prep+N	1	0
			N/Ad'=Aj+Pron	1	0
			Ad/N'=Aj+Ad/Conj	1	0
			Ad/N'=Ad/Conj+Ad/Prep	1	0
			Ad/N'=Ad/Conj+Prep	1	0
			{C+ion}	N/Ad'=Verbçe+(at)ion	1
		{C+ward}	N/Ad'=N+ward	1	0
		{C+s}	Ad/N'=Ad/N'+s	1	0
		{C+s}pl	Ad/N'=Prep+N+s	1	0
		{up+C}	N/Ad'=up+N	1	0
{CC}	Ad/N=Abbr	1	0		
28	Ad/Conj	{C+C}	Ad/Conj'=Ad/Conj+Ad	1	0
			Conj/Ad'=Ad+Ad	1	0
29	Aj/Ad/Prep	{a+C}	Ad/Prep/Aj'=Prep:(on→a)+N	3	:(on→a)
		{C+C}	Ad/Prep/Aj'=Ad+Ad	1	0
			Prep/Ad/Aj'=Prep+Ad	1	0
		{C+ward}	Ad/Aj/Prep'=Ad+ward	1	0

Appendix F. The type frequency (TF) and the type valency (TV) of the nominal, adjectival and verbal suffixes.

Table 37. The type frequency and the type valency of noun suffixes

Suffix	TF	TV	Suffix	TF	TV	Suffix	TF	TV
ance	291	4	ette	5	2	ock	2	1
ery	53	4	ful	12	1	oid	1	1
ity	136	4	hood	20	2	ol	1	1
ac	1	1	i	1	1	ome	1	1
ade	1	1	ia	3	2	on	3	1
age	87	5	ian	12	3	one	1	1
aholic	1	1	ide	3	1	or	53	2
al	31	2	ie	14	3	ory	1	1
ane	2	1	in	6	3	osis	1	1
ant	7	2	ina	1	1	our	1	1
ar	2	1	ine	7	3	red	1	1
ard	2	2	ing	939	5	s	21	3
ate	6	3	ion	116	4	ship	53	2
cade	1	1	ism	107	4	s-pl	9	2
dom	17	1	ist	99	4	ster	6	3
ee	43	4	ite	3	1	sy	1	1
eer	9	1	itis	3	1	t	2	1
el	1	1	ium	8	2	t2	1	1
eme	1	1	kin	1	1	th	6	3
end	1	1	let	11	1	ure	8	2
er	976	4	ling	8	2	wards	1	1
eroo	1	1	lock	1	1	y	65	4
ese	2	2	ment	136	3	yl	1	1
ess	27	2	ness	332	5			
et	17	3	o	5	3			

Table 38. The type frequency and type valency of adjectival suffixes

Suffix	TF	TV	Suffix	TF	TV	Suffix	TF	TV	Suffix	TF	TV
able	329	3	en_Aj	6	3	ine	7	3	oid	1	1
ac	1	1	en_V	66	5	ing_Aj	701	3	ol	1	1
ade	1	1	end	1	1	ing_N	939	5	ome	1	1
age_N	87	5	ent	4	2	ion	116	4	on	3	1
age_V	1	1	er_Aj	4	3	ise	1	1	one	1	1
aholic	1	1	er_N	976	4	ish_Aj	61	4	or	53	2
al_Aj	249	3	er_V	19	3	ish_V	1	1	ory_N	1	1
al_N	31	2	eroo	1	1	ism	107	4	ory_Aj	12	2
an	4	1	ery	53	4	ist	99	4	osis	1	1
ance	291	4	ese	2	2	ite	3	1	our	1	1
ane	2	1	esque	1	1	itis	3	1	ous	67	3
ant_Aj	4	1	ess	27	2	ity	136	4	red	1	1
ant_N	7	2	et	17	3	ium	8	2	s	21	3
ar_Aj	5	2	ette	5	2	ive	73	4	ship	53	2
ard	2	2	ful_Aj	115	4	ize	143	3	some	17	3
ar_N	2	1	ful_N	12	1	kin	1	1	s-pl	9	2
ary	11	2	hood	20	2	le_Aj	1	1	ster	6	3
ate_Aj	3	3	i	1	1	le_V	39	3	sy_N	1	1
ate_N	6	3	ia	3	2	less	178	4	sy_Aj	1	1
ate_V	27	3	ian	12	3	let	11	1	t	2	1
cade	1	1	ible	7	1	like	1	1	t2	1	1
dom	17	1	ic_Aj	80	4	ling	8	2	th	6	3
ed	1112	4	ic_V	1	1	lock	1	1	ure	8	2
ee	43	4	id	1	1	ly	46	4	wards	1	1
eer_N	9	1	ide	3	1	ment	136	3	y_Aj	294	5
eer_V	2	2	ie	14	3	most	4	2	y_N	65	4
el	1	1	ify	15	3	ness	332	5	yl	1	1
eme	1	1	in	6	3	o	5	3	yse	1	1
able	329	3	ina	1	1	ock	2	1			

Table 39. The type frequency and the type valency of verb suffixes

Suffix	TF	TV
en	66	5
ize	143	3
ise	1	1
yse	1	1
ate	27	3
le	39	3
er	19	3
ic	1	1
ish	1	1
eer	2	2
age	1	1
ify	15	3

Appendix G. Comparing diachronic productivity

Table 40. The statistical comparison of the diachronic productivity of the pairs of noun-formation processes
(Key: statistically significant results are coloured in green; σ_1 – a dispersion of KLD,
 σ_2 – a dispersion of symmetrized KLD; * – statistically significant results)

Estimators →	KLD	KLD.S	Turing	CI for KLD	CI for KLD.S	CI for Turing	Dispersion
WFP ↓							
-er vs -or	0.03179659	0.03150079	0.00474505	*-0.00781156 0.07140473	*-0.00705615 0.07005773	*-0.0348631 0.04435319	$\sigma_1 = 0.6526473$ $\sigma_2 = 0.635326$
dis- vs -ment	0.06185779	0.06098708	-0.018744	*-0.0409707 0.1646863	*-0.03997315 0.1619473	*-0.1215725 0.08408449	$\sigma_1 = 0.4029873$ $\sigma_2 = 0.3956655$
re- vs -ist	0.06220026	0.05606751	-0.0231983	*-0.06216491 0.1865654	*-0.05102434 0.1631594	*-0.1475634 0.1011669	$\sigma_1 = 0.4748371$ $\sigma_2 = 0.4088861$
-ee vs -ism	0.075263	0.05797304	-0.00859737	*-0.09003566 0.2405617	*-0.09003566 0.2405617	*-0.173896 0.1567013	$\sigma_1 = 0.6254644$ $\sigma_2 = 0.4395757$
-ing vs -er	0.075444	0.080304	0.067039	0.042968 0.10792	0.044706 0.115903	0.034563 0.099515	$\sigma_1 = 0.5099071$ $\sigma_2 = 0.5589376$
-ion vs -ence	0.07633218	0.07398904	0.05288004	0.01565813 0.1370062	0.01769485 0.1302832	*-0.00779401 0.1135541	$\sigma_1 = 0.8562205$ $\sigma_2 = 0.7944128$
-ist vs -ism	0.07647267	0.09726991	0.03943974	*-0.00111664 0.154062	*-0.0146461 0.2091859	*-0.0381496 0.1170291	$\sigma_1 = 0.4976023$ $\sigma_2 = 0.7177492$
-ity vs -ment	0.07841208	0.07100603	0.03917012	*-0.00161922 0.1584434	0.003652666 0.1383594	*-0.0408612 0.1192014	$\sigma_1 = 0.7224103$ $\sigma_2 = 0.6079717$
-ery vs -ence	0.08690815	0.08262175	0.04162461	*-0.00687218 0.1806885	*-0.00366955 0.1689131	*-0.0521557 0.1354049	$\sigma_1 = 0.5620866$ $\sigma_2 = 0.5172$
-ship vs -er	0.08774552	0.1062018	0.02345619	0.003181694 0.1723093	*-0.0132157 0.2256193	*-0.0611076 0.10802	$\sigma_1 = 0.3583943$ $\sigma_2 = 0.5061094$
-ion vs -ing	0.09316902	0.1314513	0.08450901	0.05982698 0.1265111	0.07241463 0.1904879	0.05116697 0.117851	$\sigma_1 = 0.4714381$ $\sigma_2 = 0.8347458$
-ness vs -er	0.1320878	0.1267499	0.1157204	0.06515624 0.1990193	0.06353007 0.1899696	0.04878889 0.1826519	$\sigma_1 = 0.6194132$ $\sigma_2 = 0.5850633$
-age vs -ity	0.1360465	0.1360247	0.09032287	0.03115714 0.2409358	0.03055623 0.2414933	*-0.01456647 0.1952122	$\sigma_1 = 0.6240979$ $\sigma_2 = 0.627544$
-ment vs -al	0.1413556	0.1301776	0.04554945	*-0.04010774 0.322819	*-0.02697955 0.2873348	*-0.1359139 0.2270128	$\sigma_1 = 1.357563$ $\sigma_2 = 1.175724$
-ion vs -ment	0.1541798	0.1620521	0.1297294	0.07155772 0.2368019	0.07539433 0.2487099	0.04710729 0.2123515	$\sigma_1 = 1.168231$ $\sigma_2 = 1.225293$
-ity vs -ion	0.1667074	0.1526303	0.1455156	0.08324348 0.2501713	0.07893765 0.2263231	0.06205169 0.2289795	$\sigma_1 = 0.753395$ $\sigma_2 = 0.6651944$
-ity vs -ness	0.198425	0.2633171	0.1684555	0.1110562 0.2857939	0.128224 0.3984102	0.08108666 0.2558244	$\sigma_1 = 0.7886434$ $\sigma_2 = 1.219431$
-ing vs -ness	0.20795	0.201252	0.184181	0.11999 0.29591	0.120439 0.282064	0.096221 0.272141	$\sigma_1 = 1.381061$ $\sigma_2 = 1.26884$
-ness vs -ship	0.219537	0.213871	0.133576	0.028811 0.410264	0.039766 0.387976	*-0.05715 0.324303	$\sigma_1 = 1.765066$ $\sigma_2 = 1.611247$
-ment vs -ness	0.2268087	0.3066987	0.1901221	0.1238526 0.3297647	0.1347465 0.4786508	0.08716603 0.2930781	$\sigma_1 = 0.7755897$ $\sigma_2 = 1.295352$
-ee vs -age	0.2937375	0.4349925	0.2264935	0.1249768 0.4624981	0.07296636 0.7970187	0.05773282 0.3952541	$\sigma_1 = 0.6385641$ $\sigma_2 = 1.369851$
C-C vs -ship	0.30758	0.300542	0.232298	0.091035 0.524125	0.106129 0.494955	0.015753 0.448843	$\sigma_1 = 3.389186$ $\sigma_2 = 3.042793$
-y vs -or	0.3594393	0.3883928	0.3102533	0.1847108 0.5341678	0.1914845 0.5853011	0.1355249 0.4849818	$\sigma_1 = 1.077189$ $\sigma_2 = 1.213926$
-age vs -ment	0.3670815	0.3217552	0.2966626	0.1422958 0.5918673	0.1405818 0.5029287	0.07187689 0.5214484	$\sigma_1 = 1.337489$ $\sigma_2 = 1.077993$
C-C vs -er	0.37303	0.342527	0.363632	0.284966 0.461093	0.266928 0.418127	0.275568 0.451695	$\sigma_1 = 1.378296$ $\sigma_2 = 1.183218$
re- vs -ism	0.4017403	0.302557	0.2548411	*-0.0186874 0.8221681	0.02164656 0.5834675	*-0.1655866 0.6752689	$\sigma_1 = 1.60523$ $\sigma_2 = 1.072541$
-ion vs -ness	0.4521076	0.5300084	0.4285732	0.326041 0.5781743	0.3786345 0.6813822	0.3025066 0.5546399	$\sigma_1 = 1.782513$ $\sigma_2 = 2.140344$
-ing vs C-C	0.560321	0.605603	0.54756	0.466665 0.653978	0.50239 0.708815	0.453904 0.641217	$\sigma_1 = 1.4705$ $\sigma_2 = 1.620532$
C-C vs -ness	0.563111	0.490013	0.534907	0.376256 0.749967	0.352017 0.628009	0.348052 0.721763	$\sigma_1 = 2.924508$ $\sigma_2 = 2.159804$
dis- vs re-	0.7816313	0.7821682	0.6220015	0.2627016 1.300561	0.2836153 1.280721	0.1030718 1.140931	$\sigma_1 = 1.981319$ $\sigma_2 = 1.903519$

Table 41. The statistical comparison of the diachronic productivity of the pairs of adjective-formation processes

Estimators → WFP ↓	KLD	KLD.S	Turing	CI for KLD	CI for KLD.S	CI for Turing	Dispersion
-ed vs -ing	0.03096907	0.03471118	0.0214076	0.008930487 0.05300766	0.008890119 0.06053348	*-0.00063098 0.04344619	$\sigma_1 = 0.3685002$ $\sigma_2 = 0.4317562$
-ish vs -less	0.04701051	0.0462667	-0.03440161	*-0.04390493 0.1379259	*-0.04256354 0.1350969	*-0.125317 0.05651383	$\sigma_1 = 0.3622884$ $\sigma_2 = 0.3539791$
-y vs -ish	0.05621314	0.05021904	-0.02525818	*-0.05074245 0.1631687	*-0.03886689 0.139305	*-0.1322138 0.08169741	$\sigma_1 = 0.9685247$ $\sigma_2 = 0.8067079$
in- vs un-	0.06319473	0.05283972	-0.0223162	*-0.06178858 0.188178	*-0.0411014 0.1467808	*-0.1472995 0.1026671	$\sigma_1 = 0.9691922$ $\sigma_2 = 0.7284733$
-ed vs un-	0.06843592	0.07137744	0.04635136	0.01539804 0.1214738	0.01670597 0.1260489	*-0.00668653 0.09938925	$\sigma_1 = 0.8868298$ $\sigma_2 = 0.9141444$
-y vs -less	0.07005085	0.06603309	0.0285161	*-0.00431737 0.1444191	*-0.00143236 0.1334985	*-0.04585212 0.1028843	$\sigma_1 = 0.6734332$ $\sigma_2 = 0.610926$
-able vs -ive	0.07138401	0.06442002	0.03794916	*-0.0109362 0.1537042	*-0.00480920 0.1336492	*-0.04437107 0.1202694	$\sigma_1 = 0.843162$ $\sigma_2 = 0.7090777$
-able vs -al	0.07595197	0.07152695	0.054773	0.01319348 0.1387105	0.01452015 0.1285337	-0.007985486 0.1175315	$\sigma_1 = 0.6428015$ $\sigma_2 = 0.5838901$
-able vs -less	0.08195488	0.07942823	0.0526031	0.006391449 0.1575183	0.00789539 0.1509611	*-0.02296033 0.1281665	$\sigma_1 = 0.7739557$ $\sigma_2 = 0.7326725$
-ed vs -able	0.1211405	0.1294473	0.1105701	0.06694686 0.1753342	0.07062964 0.1882649	0.05637641 0.1647637	$\sigma_1 = 0.9061552$ $\sigma_2 = 0.9834714$
-y vs -ful	0.1563516	0.1473431	0.09892802	0.02659344 0.2861098	0.03135888 0.2633273	*-0.0308302 0.2286862	$\sigma_1 = 1.175011$ $\sigma_2 = 1.050282$
-ful vs -less	0.1575109	0.1637734	0.09341934	0.03093679 0.2840851	0.02983179 0.2977151	*-0.03315482 0.2199935	$\sigma_1 = 0.7074367$ $\sigma_2 = 0.7486144$
-ish vs -ful	0.1666526	0.1654094	0.06840867	*-0.01626917 0.3495744	*-0.01482101 0.3456398	*-0.1145131 0.2513305	$\sigma_1 = 0.7289241$ $\sigma_2 = 0.7181992$
-ing vs -less	0.1998519	0.2189251	0.17187	0.1038938 0.29581	0.1128696 0.3249805	0.0759119 0.2678281	$\sigma_1 = 1.604485$ $\sigma_2 = 1.773319$
-ic vs -ish	0.2003032	0.2708668	0.1310856	0.03470138 0.3659049	0.01400323 0.5277303	*-0.03451616 0.2966874	$\sigma_1 = 0.9178208$ $\sigma_2 = 1.423624$
C-C vs -ish	0.2050638	0.2213299	0.1313974	0.01231414 0.3978135	0.018816 0.4238437	*-0.06135232 0.3241471	$\sigma_1 = 1.333996$ $\sigma_2 = 1.401572$
-ic vs -able	0.2178672	0.2573571	0.1892967	0.1016798 0.3340546	0.1010972 0.413617	0.07310924 0.3054841	$\sigma_1 = 0.6439498$ $\sigma_2 = 0.8660449$
-ic vs -ive	0.2346081	0.2564741	0.1898475	0.07399825 0.3952179	0.07535969 0.4375885	0.02923766 0.3504573	$\sigma_1 = 0.8901538$ $\sigma_2 = 1.003797$
-ing vs -ous	0.2583998	0.2293751	0.2101076	0.105903 0.4108966	0.1094062 0.349344	0.05761077 0.3626044	$\sigma_1 = 2.015459$ $\sigma_2 = 1.585557$
C-C vs -y	0.2627868	0.3178913	0.2322051	0.1401582 0.3854154	0.1503569 0.4854258	0.1095765 0.3548337	$\sigma_1 = 0.8486968$ $\sigma_2 = 1.159484$
C-C vs -less	0.2717075	0.2782585	0.228775	0.1072544 0.4361606	0.1139039 0.442613	0.06432189 0.3932281	$\sigma_1 = 1.138159$ $\sigma_2 = 1.137477$
-ing vs -ly	0.4406821	0.4988687	0.314736	0.1628643 0.7184999	0.2116314 0.786106	0.03691818 0.5925539	$\sigma_1 = 3.750257$ $\sigma_2 = 3.877411$
-ic vs in-	0.4418637	0.4142845	0.3542109	0.1049647 0.7787626	0.1143534 0.7142155	0.01731198 0.6911098	$\sigma_1 = 1.353466$ $\sigma_2 = 1.20495$
C-C vs -ed	0.5158493	0.4766006	0.4909529	0.345668 0.6860307	0.3195297 0.6336715	0.3207716 0.6611343	$\sigma_1 = 1.177804$ $\sigma_2 = 1.087067$
-ed vs -ly	0.5407173	0.6812391	0.4059647	0.2424111 0.8390235	0.3422663 1.020212	0.1076584 0.7042709	$\sigma_1 = 4.987884$ $\sigma_2 = 5.667858$
-ive vs -ous	0.5591775	0.4524792	0.475855	0.2265773 0.8917777	0.2168057 0.6881527	0.1432548 0.8084552	$\sigma_1 = 2.078356$ $\sigma_2 = 1.47268$
C-C vs -ing	0.5863452	0.5368635	0.5572543	0.3877962 0.7848943	0.3585616 0.7151653	0.3587053 0.7558034	$\sigma_1 = 1.374132$ $\sigma_2 = 1.234004$
C-C vs un-C	0.7162983	0.6321482	0.6496103	0.3769334 1.055663	0.3750101 0.8892863	0.3102454 0.9889751	$\sigma_1 = 2.348701$ $\sigma_2 = 1.77962$
-able vs -ous	0.7314641	0.5685127	0.6319468	0.3750175 1.087911	0.3374589 0.7995664	0.2755002 0.9883935	$\sigma_1 = 3.650892$ $\sigma_2 = 2.36656$
-ish vs -ly	0.7576459	0.7743093	0.5141545	0.1759687 1.339323	0.250254 1.298365	*-0.06752265 1.095832	$\sigma_1 = 2.317922$ $\sigma_2 = 2.088305$
-ic vs -ous	1.433104	1.232208	1.287257	0.844736 2.021473	0.7941132 1.670302	0.6988888 1.875626	$\sigma_1 = 3.260936$ $\sigma_2 = 2.428067$

Table 42. The statistical comparison of the diachronic productivity of the pairs of verb-formation processes

Estimators →	KLD	KLD.S	Turing	CI for KLD	CI for KLD.S	CI for Turing	Dispersion
WFP ↓							
dis- vs mis-	0.01905298	0.01853758	-0.1068877	*-0.06791143 0.1060174	*-0.06473701 0.1018122	-0.1938521 -0.01992332	$\sigma_1 = 0.337915$ $\sigma_2 = 0.3235776$
-le vs -en	0.04586034	0.06251019	-0.05090279	*-0.06874929 0.16047	*-0.0557581 0.1807785	*-0.1655124 0.06370683	$\sigma_1 = 0.4822003$ $\sigma_2 = 0.4975935$
re- vs dis-	0.05228326	0.05962687	-0.00151742	*-0.03646774 0.1410343	*-0.04576676 0.1650205	*-0.09026842 0.08723358	$\sigma_1 = 0.6159012$ $\sigma_2 = 0.7313953$
-en vs un-	0.07115535	0.07228941	-0.07146766	*-0.07951404 0.2218247	*-0.08112075 0.2256996	*-0.222137 0.07920173	$\sigma_1 = 0.6245237$ $\sigma_2 = 0.6358841$
de- vs dis-	0.08252717	0.08674184	-0.00191879	*-0.05574759 0.2208019	*-0.06085941 0.2343431	*-0.1401935 0.136356	$\sigma_1 = 0.5817673$ $\sigma_2 = 0.6210069$
mis- vs en-	0.1039439	0.102833	-0.1110543	*-0.1115922 0.31948	*-0.1082215 0.3138876	*-0.3265904 0.1044818	$\sigma_1 = 0.6412264$ $\sigma_2 = 0.6278937$
mis- vs re-	0.1039439	0.102833	-0.1110543	*-0.1115922 0.31948	*-0.1082215 0.3138876	*-0.3265904 0.1044818	$\sigma_1 = 0.6412264$ $\sigma_2 = 0.6278937$
un- vs mis-	0.119547	0.1219669	-0.1285473	*-0.1053826 0.3444766	*-0.1047825 0.3487162	*-0.3534769 0.09638224	$\sigma_1 = 0.7258192$ $\sigma_2 = 0.7316913$
re- vs un-	0.1670242	0.2046805	0.05778206	*-0.02045465 0.354503	*-0.03036382 0.4397249	*-0.1296968 0.2452609	$\sigma_1 = 1.431621$ $\sigma_2 = 1.79484$
re- vs en-	0.1891411	0.1661673	0.03706338	*-0.07738262 0.4556649	*-0.04342907 0.3757637	*-0.2294604 0.3035871	$\sigma_1 = 2.030674$ $\sigma_2 = 1.596938$
re- vs de-	0.205982	0.2429323	0.1508012	0.06876933 0.3431947	0.0733815 0.412483	0.01358856 0.2880139	$\sigma_1 = 1.045439$ $\sigma_2 = 1.291826$
en- vs -en	0.226303	0.2397658	0.1063801	*-0.05867722 0.5112832	*-0.04051432 0.5200458	*-0.1786001 0.3913603	$\sigma_1 = 0.8963104$ $\sigma_2 = 0.8815276$
-ate vs -en	0.2343975	0.3341943	0.1869675	0.0715882 0.3972069	0.07683879 0.5915498	0.02415819 0.3497769	$\sigma_1 = 1.336845$ $\sigma_2 = 2.113174$
-le vs -ate	0.3216734	0.2657057	0.2305518	0.04095968 0.6023871	0.0512078 0.4802037	*-0.05016192 0.5112655	$\sigma_1 = 1.145791$ $\sigma_2 = 0.8755179$
-ize vs re-	0.3661276	0.3834163	0.3108206	0.1644173 0.5678379	0.1623849 0.6044478	0.1091103 0.512531	$\sigma_1 = 0.9654313$ $\sigma_2 = 1.057907$
C-C vs -ize	0.4206315	0.4061107	0.2951378	0.05370096 0.787562	0.05360253 0.7586189	*-0.07179269 0.6620684	$\sigma_1 = 1.138772$ $\sigma_2 = 1.094012$
-ate vs re-	0.4301277	0.5649663	0.4060733	0.2850809 0.5751746	0.3428409 0.7870916	0.2610265 0.5511202	$\sigma_1 = 1.193292$ $\sigma_2 = 1.827413$
-ize vs -ate	0.884573	0.7617591	0.7713286	0.4697132 1.299433	0.4370488 1.08647	0.3564688 1.186188	$\sigma_1 = 1.985613$ $\sigma_2 = 1.554137$
C-C vs mis-	1.107264	0.9548643	0.7401245	0.1137659 2.100763	0.2230099 1.686719	-0.253374 1.733623	$\sigma_1 = 3.124719$ $\sigma_2 = 2.301804$
C-C vs -ate	2.020724	1.408285	1.725443	0.7876877 3.253761	0.6415525 2.175017	0.4924068 2.95848	$\sigma_1 = 3.826738$ $\sigma_2 = 2.379559$

Appendix H. Cluster analyses

Table 43. The data set used in the clustering analyses (the imputed data is coloured in blue)

Constr	TV	TF_OED.s	TF_MQ	TokF_MQ	TF_ML	TokF_ML	P_ML	P_ML	P_C	TF_C	TTR_MQ	TTR_ML	O
ing.N	5	939	1526	40889	937	1227992	4.65E-05	0.00139	0	100	0.037321	0.000763	OE
ness	5	332	309	4992	1243	181553	0.000584	0.016376	0.008	483	0.061899	0.006846	OEG
ment	3	136	194	26081	288	1423689	1.26E-05	0.002781	0	172	0.007438	0.000202	FL
age	5	87	94	6020	82	257400	1.94E-05	0.000772	0.002	136	0.015615	0.000319	L
al.N	2	31	37	2469	1	499	9.60E-06	0.002781	0.001	300	0.014986	0.002004	L
C-ee	4	43	28	3185	48	130049	1.54E-05	0.000309	0.005	68	0.008791	0.000369	AN
ence	4	291	254	17876	323	977837	7.16E-06	0.001081	0	165	0.014209	0.00033	L
ery	4	53	240	10052	1	499	0	0	0.005	191	0.023876	0.002004	FL
ion	4	116	600	52016	1599	6530204	9.03E-06	0.009115	0.001	189	0.011535	0.000245	FL
ism	4	107	189	1748	271	218200	5.50E-05	0.001854	0.003	137	0.108124	0.001242	FG
ist	4	99	260	3113	462	382916	6.27E-05	0.003708	0.005	168	0.083521	0.001207	FG
ity	4	136	300	16592	580	1647588	1.76E-05	0.00448	0.001	288	0.018081	0.000352	FL
or	2	53	224	10814	289	937614	9.60E-06	0.00139	0.004	221	0.020714	0.000308	L
ship	2	53	54	2366	76	164220	1.22E-05	0.000309	0.009	69	0.022823	0.000463	OE
y.N	4	65	133	23426	1599	1227992	5.50E-05	0	0.005	1032	0.005677	0.001302	OFL
re.N	4	38	479	52492	288	937614	0	0	0.002	289	0.009125	0.000307	L
dis.N	1	23	144	9708	76	1848	0.000149	0.002781	0.001	118	0.014833	0.041126	L
ed	4	1112	1434	28396	937	181553	1.22E-05	0	0.001	1032	0.0505	0.005161	OE
ing.Aj	3	701	940	13665	462	977837	0.000126	0.010196	0.001	288	0.068789	0.000472	OE
able	3	329	304	6381	872	1227992	3.18E-05	0.006025	0.003	278	0.047641	0.00071	L
al.Aj	3	249	558	37583	430	937614	0.000149	0.001699	0.001	300	0.014847	0.000459	L
y.Aj	5	294	660	19351	872	3857999	7.16E-06	0	0	1032	0.034107	0.000226	OE
ful	4	115	77	5962	343	429561	5.82E-05	0.003862	0.002	183	0.012915	0.000798	OE
less	4	178	117	826	368	158354	0.00012	0.002935	0.017	340	0.141646	0.002324	OE
un.Aj	1	235	421	5018	462	429561	2.11E-05	0.010196	0.005	241	0.083898	0.001076	OE
ive	4	73	209	7193	580	1037354	1.74E-05	0.002781	0.003	66	0.029056	0.000559	FL
ous	3	67	261	8116	1	214	0	0	0.001	171	0.032159	0.004673	L
ic	4	80	391	7500	9	2108	0	0	0.002	287	0.052133	0.004269	FG
in. Aj	3	43	251	22521	252	1647588	7.16E-06	0.016376	0.004	192	0.011145	0.000153	L
ish	4	61	57	216	252	161977	0.000111	0.002781	0.005	206	0.263889	0.001556	OE
ly	4	46	66	8893	2898	3857999	4.48E-05	0.026726	0.001	1158	0.007422	0.000751	OE
ize	3	145	172	5913	430	443161	0.000149	0.010196	0.001	143	0.029088	0.00097	FG
re.V	4	125	479	52492	462	977837	9.60E-06	0.001854	0.002	289	0.009125	0.000472	L
ate.V	3	27	42	591	937	2569118	2.65E-05	0.010505	0.003	100	0.071066	0.000365	L
en.V	5	24	56	7045	204	655590	1.68E-05	0.001699	0.003	200	0.007949	0.000311	OE
un.V	2	40	48	468	76	2108	0.000149	0.00448	0	241	0.102564	0.036053	OE
le	3	39	55	633	5	1848	0	0	0.004	241	0.086888	0.002706	OE
mis.V	1	33	63	938	111	103160	0.000126	0.002008	0.006	53	0.067164	0.001076	GT
de.V	3	38	178	21901	275	559431	4.65E-05	0.004017	0.004	121	0.008127	0.000492	L
dis.V	2	28	41	5690	5	257400	0	0.002781	0.001	118	0.007206	1.94E-05	L
en.V	4	24	56	4428	148	331620	2.11E-05	0.001081	0.002	82	0.012647	0.000446	L

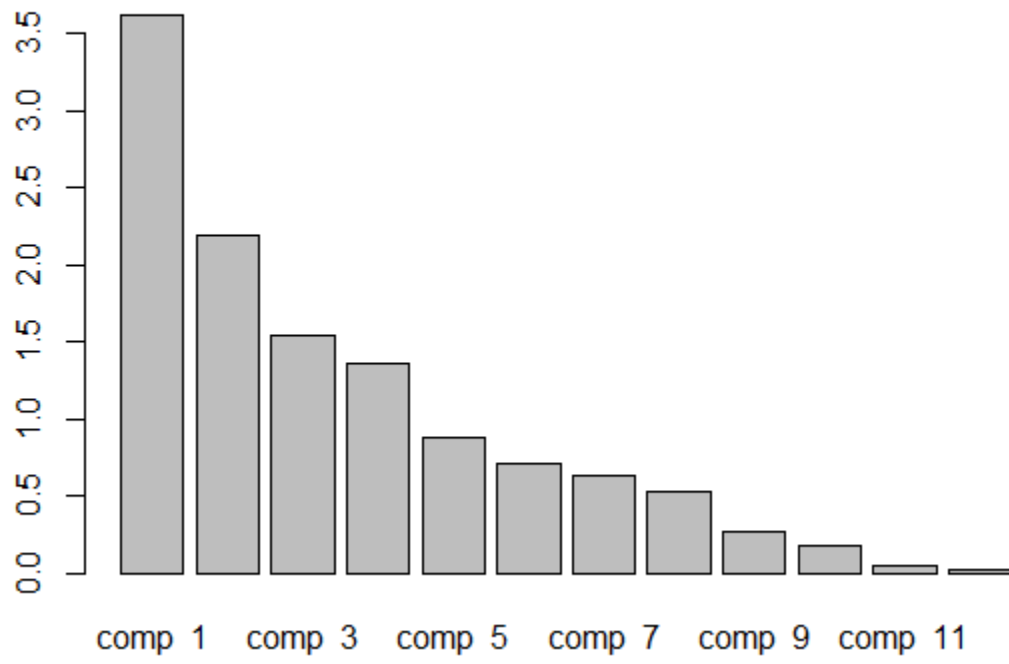


Figure 11. The bar plot of the components in the PCA model