DOI: 10.2478/v10122-010-0004-z

IRREGULAR SOUND CHANGE DUE TO FREQUENCY IN GERMANIC LANGUAGES

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ABSTRACT. Witold Mańczak. *Irregular Sound Change due to Frequency in Germanic Languages*. Lingua Posnaniensis, vol. LII (1)/2010. The Poznań Society for the Advancement of the Arts and Sciences. PL ISSN 0079-4740, ISBN 978-83-7654-030-6, pp. 55–65

Until now, irregular sound change due to frequency has been considered as something sporadic, affecting only the vocabulary, whereas, according to the present writer, irregular sound change due to frequency, which concerns also reductions in morphemes, especially in inflectional ones (which are even more frequently used than words), is the third essential factor of linguistic evolution, in addition to regular sound change and analogical development. There is a synchronic law according to which the linguistic elements which are more often used are smaller than those which are less often used. There is a kind of balance between the size of linguistic elements and their frequency. But if a linguistic element (morpheme, word or group of words) becomes too long in relation to its frequency, it must be shortened.

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1. INTRODUCTION

The notion of irregular sound change due to frequency is not new. It would be difficult for me to say who was the first to use the term, but in any case it was used as early as 1846 by DIEZ (1846: 12), the founder of the comparative grammar of Romance languages, who considered Fr. *sire* < Lat. *senior* as 'durch häufigen Gebrauch verkürzt'. Some years later, the famous etymologist POTT (1852: 315) stated that It. *andare*, Sp. *andar*, and Fr. *aller* derive from Lat. *ambulāre* 'mit zwar ungewöhnlichen, aber durch die Häufigkeit des Gebrauchs von diesem Worte gerechtfertigten Buchstabenwechseln'. Other linguists followed them. There is, however, an essential difference between the opinions of my predecessors and mine on this subject. Until now, irregular sound change due to frequency has been considered as something sporadic, affecting only the vocabulary, whereas, to my mind, irregular sound change due to frequency, which concerns also reductions in morphemes, especially in inflectional ones (which are even more frequently used than words) is the third essential factor of linguistic evolution, in addition to regular sound change and analogical development: in any text of some languages, even one third of the words show an irregular sound change due to frequency.

In brief, the theory of irregular sound change due to frequency can be presented as follows. There is a synchronic law according to which the linguistic elements which are more often used are smaller than those which are less often used. There is a kind of balance between the size of linguistic elements and their frequency. Anyhow, the size of linguistic elements is not stable. As a result of regular sound change, the size of words may change considerably as the comparison of some Old and New High German words shows:

OHG *ūf* (2 phonemes) > NHG *auf* (3 phonemes) – increase of 50%;
lēra (4) > *Lehre* (4) – no change;
skōni (5) > *schön* (3) – decrease of 40%.

Since the frequency of words is not stable either, it may happen that the balance between the size of a word or of a morpheme and its frequency is disturbed. If a word or a morpheme becomes too short in relation to its frequency, it is replaced by a longer one. But if a linguistic element (i. e. a morpheme, word, or group of words) becomes too long in relation to its frequency, it must be shortened, and then there are two possibilities: either a mechanical shortening (*autobus* > *bus*) or an irregular change due to frequency (*master* > *mister*, *you are* > *you're*, Lat. *dēb-ēbat* > Fr. *dev-ait*).

If irregular sound change due to frequency is far advanced, it consists of the decay of one or more phonemes, e. g. *God be with you* > *good-bye*. However, if the development due to frequency has just started, it may only consist in a partial reduction of a phoneme, e. g.

(a) the long vowel undergoes a reduction: Goth. *sunus* shows a short vocalism athough the vowel was long in Proto-Indo-European, cf OI *sūnú-*, Lith. *sūnùs*, OCS *synŭ*;

(b) the degree of the vowel opening is subject to a reduction (*a* > *e* > *i* or *a* > *o* > *u*), e. g. in OHG *nëmamēs* > *nëmumēs*, the vowel *a* narrowed to *u*, in OHG *stān* > *stēn*, to *e*;

(c) the full vowel is changed into a reduced one: *shall* may be pronounced with an [ə];

(d) the nasal vowel is subject to denasalization: Pol. *będzie* 'will be' may be pronounced with *e* instead of *ę*;

(e) the palatal consonant undergoes a depalatalization: the Russian reflexive pronoun may be pronounced as [sa];

(f) the voiceless consonant becomes voiced, the pronunciation of voiced consonant seeming to be easier: an irregular voicing occurs in the ending *-s* (plural, genitive, and 3rd pers. sing.) and in some very frequent words like *as*, *of*, or *the*.

There are six arguments which can be mentioned in favour of the theory of irregular sound change due to frequency.

2. FIRST ARGUMENT

If a frequency dictionary for a given language and for a given epoch exists, we may use it, since the majority of words showing an irregular change due to frequency belong to the thousand words most frequently used in the given language. E. g. in French, the distribution of these words is a follows:

First thousand	99
Second thousand	9
Third thousand	4
Fourth thousand	2
Fifth thousand	1
Sixth thousand	0

For more details, see Mańczak 1969: 20.

3. SECOND ARGUMENT

In addition to irregular sound change due to frequency, there are other irregular sound changes, namely assimilations, dissimilations, metatheses, and expressive and overcorrect forms. These irregular sound changes are characterized by the fact that they occur in different words in different languages, e. g. a dissimilation took place in Ger. *Fibel* < *Bibel*, a metathesis in *Born* < *Bronn*; however, in another Indo-European language, it would not be easy to find a word meaning 'primer' with a dissimilation or a word meaning 'a well' with a metathesis. In other words, there is no parellelism between the words showing irregular changes such as assimilations, dissimilations, etc. in different languages, whereas irregular sound change due to frequency occurs in various languages more or less in parallel, which is explained by the fact that the most frequently used words are nearly the same in all languages. Here are some examples.

Mister < *master* and *sir*, which derives from Fr. *sire*, also irregularly developed from Lat. *senior*, show irregular reductions. The same is true for Fr. *monsieur* < *monseigneur* or Sp. *don*, being used alongside the more regular *dueño* < Lat. *dominum*. Although the opinion on the etymology of Pol. *pan* or Czech *pán* is not unanimous, it is unquestionable that these words derive from a longer form, as is the case with Russian *barin*, which has developed from *bojarin*.

The fact that a whole mosaic of Old High German forms *anti*, *ande*, *enti*, *endi*, *indi*, *inti*, *inde*, *inte*, *int*, *in*, *unta*, *unte*, *unti*, *un* correspond to NHG *und* shows explicitly that we face here an irregular sound change due to frequency. Similarly in none of the Romance languages, Lat. *et* has developed normally, cf Fr. *et*, It. *e*, or Sp. *y*. The conjunction *a*, attested in many Slavic languages, also shows a reduced form.

OHG *gangan* is irregularly reduced to *gān*, *gēn*, whence modern *gehen*. Similarly, reduced forms occur in other Germanic languages, cf E *go*, Dutch *gaan*, Dan. *gå*, etc. Lat. *ambulāre* undergoes a reduction in the Romance languages, cf Fr. *aller*, It. *andare*, Prov. *ana*, etc. In the same way, Common Slavic **šĭdlŭ* (> Pol. *szedł*, R *šel*, etc.) exhibits an irregular reduction, namely the occurrence of *ĭ* instead of *e* (alternating with *o* in **choditi*).

4. THIRD ARGUMENT

If in a given language, a morpheme, word, or group of words occurs in a double form (regular and irregular), irregular sound change due to frequency is characterized by the fact that the irregular form is usually used more often than the regular one. In all living Germanic

languages, the suffix *-isk-* shows a double development: *Engl-ish* and *Wel-sh*, *Scott-ish* and *Scot-ch* or *Scot-s*, Ger. *französ-isch* and *deut-sch*, Dutch *Olymp-isch* and *Nederland-s*, Swed. *nord-isk* and *sven-sk*, etc. The reduced forms of the suffix in question are to be explained by irregular sound change due to frequency.

As far as Swedish goes, I excerpted several pages in the newspaper *Dagens Nyheter*, where I found the following forms in *-isk* and *-sk*:

-isk: 13 *politisk*; 7 *ekonomisk*, *nordisk*; 6 *brittisk*, *symmetrisk*; 4 *faktisk*, *praktisk*, *saudiarabisk*; 3 *demokratisk*, *psykisk*, *skandinavisk*, *socialdemokratisk*; 2 *arabisk*, *babylonisk*, *dramatisk*, *europeisk*, *källkritisk*, *mekanisk*, *österrikisk*, *saudisk*; *1 aktivistisk*, *automatisk*, *belgisk*, *byråkratisk*, *diplomatisk*, *elektronisk*, etc.

-sk: 35 *svensk*; 30 *dansk*; 11 *amerikansk*, *fransk*; 5 *afrikansk*, *tysk*; 4 *engelsk*, *norsk*; 2 *japansk*, *rysk*, *västtysk*; 1 *holländsk*, *inhemsk*, *medicinsk*, *platonsk*, *polsk*, *skånsk*, *stockholmsk*, *utländsk*, *västerländsk*.

From the statistical point of view, these data are as follows:

	Number of attestations	Number of words	Mean frequency of occurrence
-isk	116	57	2
-sk	120	20	6

The mean frequency of occurrence of the derivatives in *-sk* (with irregular sound change) is higher than that of the words in *-isk* (with regular sound change).

As far as German is concerned, I excerpted several pages in the journal *Die Zeit*, where I found the following forms in *-isch* and *-sch*:

-isch: 8 *europäisch*; 7 *klinisch*; 4 *genetisch*, *kritisch*; 3 *englisch*, *gentherapeutisch*, *technisch*; 3 *britisch*, *französisch*, *gentechnisch*, *mitteleuropäisch*, *römisch*; *1 amerikanisch*, *belgisch*, *biophysikalisch*, *editorisch*, etc.

-sch: 22 *deutsch(land)*

From the statistical point of view, these data are as follows:

	Number of attestations	Number of words	Mean frequency of occurrence
-isch	63	33	2
-sch	22	1	22

The mean frequency of the word *deutsch* (with irregular sound change) is much higher than that of the derivatives in *-isch* (witch regular sound change).

As far as Dutch goes, I excerpted several pages in *Leidsch Dagblad*, where I found the following forms in *-isch* and *-s*:

-isch: 4 *logisch*; 3 *economisch*, *historisch*; 2 *academisch*, *botanisch*, *democratisch*; 1 *automatisch*, *calvinistisch*, etc.

-s: 66 *Leids*; 40 *Amerikaans*; 9 *Engels*; 6 *Nederlands*; *buitenlands*; 3 *Duits(land)*, *Hollands*; 3 *Anglicaans*, *Japans*, *westers*; 1 *aards*, *Amsterdams*, *binnenlands*, *Brits*, etc.

From the statistical point of view, these data are as follows:

	Number of attestations	Number of words	Mean frequency of occurrence
-isch	22	12	2
-s	152	25	6

The state of affairs is similar in other Germanic languages (Danish, etc.). Only English is an exception because *English*, where *-ish* is preserved, is more frequently used than derivatives like *Welsh*, *Scotch*, *Dutch*, *French*, *Scots*, *Norse*, or *Manx*, where the suffix underwent a reduction. This is to be explained by the fact that the consonant cluster preceding *-ish* in *English* made the reduction of the suffix impossible.

In French, Latin *-ēnsem* and Germanic *-isk* have converged in one suffix, which appears under a double form, *-ois* and *-ais*. The suffix *-ois*, originally pronounced [wɛ], either regularly developed into [wa] or was reduced into [ɛ], undergoing irregular sound change due to frequency. I excerpted several pages in the newspaper *Le Monde*, where I found the following derivatives in *-ois* and *-ais*:

-ois: 13 *chinois*; 10 *François*; 2 *québécois*, *suédois*; 1 *berlinois*, *dauphinois*, *hongrois*, *Luxembourgeois*, *munichois*, *patois*, *Rueillois*.
-ais: 112 *français*; 23 *polonais*; 22 *anglais*; 11 *japonais*; 10 *libanais*, *néerlandais*; 3 *hollandais*, *lyonnais*, *portugais*; 2 *new-yorkais*; 1 *aveyronnais*, *bourbonnais*, *écossais*, *irlandais*, *pakistanais*.

	Number of attestations	Number of words	Mean frequency of occurrence
-ois	34	11	3
-ais	200	15	13

All these statistical data demonstrate that there is a connection between high frequency and irregular reductions of the Germanic suffix *-isk-* both in French and in Germanic languages.

The situation is similar if there are not double suffixes, but double words. It is not necessary to consult frequency dictionaries in order to know that the irregular *a*, *my*, *Mr*., *Mrs*., *sir*, *business* or Ger. *hübsch*, *Herr* are more often used than, respectively, *one*, *mine*, *master*, *mistress*, *sire*, *busyness*, Ger. *höfisch*, *hehrer*. The same observation concerns groups of words, e. g. *good-bye*, Ger. *zwar* are more frequently used than *God be with you*, Ger. *zu wahr*.

5. FOURTH ARGUMENT

If irregular sound change due to frequency occurs within a paradigm or within a word family, it may be recognized by the fact that only the more commonly used forms are subject to it, whereas the forms used less frequently remain regular; e. g. the Old High German verb *stantan*, *standan* is reduced to *stān*, *stēn* (> *stehen*). That this development is due to frequency is proved by the fact that the change concerns the more frequently used present tense and does not apply to the less frequently used preterite (*stand*). Besides, it should be pointed out that in Old High German texts collected in Braune's chrestomathy, the reduction takes place in the simple forms (*stantan* > *stān*, *stēn*, whereas, in the majority of the compound forms such as *gistantan*, *aʒstantan*, *intstantan*, *ūfstantan*, *ūfarstantan*, *umbistantan*, *widarstantan*, it does not occur (except in *farstantan* and *arstantan*). Obviously, the simple forms are generally used more often than the compounds.

The same applies in the case of the Old High German verb *gangan*, which is reduced to *gān*, *gēn* in the present tense, which explains today's difference between the irregular *gehen* and the regular *ging*. Claiming our attention also is the fact that among the compound forms

of this verb mentioned in Braune, 14 do not show any reduction (*ar-*, *bi-*, *fer-*, *ful-*, *fram-*, *in-*, *int-*, *missi-*, *ubar-*, *ūf-*, *untar-*, *ūʒ-*, *ūʒar-*, *zigangan*).

When we consider Ger. *haben*, it appears that the forms in the singular present indicative, which are more often used, are shortened (*hast*, *hat*), whereas the plural forms *haben*, *habt* are regular. As far as the relation of this verb to its compound forms is concerned, it is worth comparing the irregular E *has*, *have*, *had* to the regular *behaves*, *behave*, *behaved*. Anyway, a similar phenomenon occurred in Old High German: *habēn* was shortened to *hān*, but the compound forms *anthabēn*, *bihabēn* did not exhibit any reduction.

6. FIFTH ARGUMENT

If one compares two irregular sound changes due to frequency in a linguistic atlas, the area of the more frequent form is larger that that of the less frequent one. In different languages, the infinitive suffix undergoes an irregular reduction, e. g. in English, where *give* is shortened whereas Ger. *geben* is regular (Mańczak 1993). The same applies to Romance, Slavic, and Baltic languages. In a French text, the infinitive in *-er* occurs 101, that in *-ir* 36, and that in *-oir* 18 times. In the *Atlas linguistique de France*, I found that *r* is not pronounced in the infinitives in *-er* in 291 villages, in the infinitives in *-ir* in 188 villages, and in the infinitives in *-oir* in eight villages. In other words, the area of dropping *r* in the frequent verbs of the type *aller* is larger than that of dropping *r* in the less frequent verbs of the type *dormir*, while the area of dropping *r* in the rare verbs of the type *avoir* is the smallest.

7. SIXTH ARGUMENT

If a frequency dictionary and a reverse dictionary are available for a given language, it is useful to examine series of words beginning or finishing in the same letter or letters. Here are some statistical data which I have established on the basis of the frequency dictionary by Thorndike and Lorge (1944) and the reverse dictionary by Lehnert (1971).

In English, there are 15 words in *-ave*, e. g. *save*, among which only one shows a monophthongization of the diphthong, namely *have*, and it is worth noting that *have* is the most frequent of the words in *-ave*, cf 'the Lorge magazine count': *have* 24456, *save* 872, *wave* 478, *grave* 243, *brave* 216, *slave* 123, *crave* 74, *shave* 62, *rave* 53, *cave* 40, *pave* 38, *suave* 27, *stave* 11, *knave* 2, *lave* 2.

There are 16 monosyllabic weak verbs in *-ay*, e. g. *play*, among which only one shows irregular reductions, namely *say* (*says*, *said*), and it is important to call attention to the fact that *say* is the most frequent of the verbs in *-ay*, cf 'the Lorge-Thorndike semantic count': *say* 3168, *play* 1456, *pay* 1270, *lay* 717, *stay* 463, *pray* 307, *nay* 205 (unfortunately, different parts of speech are not distinguished by Lorge and Thorndike), *ray* 148, *hay* 86, *spray* 77, *clay* 66, *tray* 26, *fray* 24, *flay* 10.

There are 5 words in *-ayer* (in the dictionary by Thorndike and Lorge), e. g. *layer*, among which only one shows a reduced pronunciation, namely *prayer*, and *prayer* is the most frequent word in *-ayer*, cf 'the Thorndike general count': *prayer* 350, *layer* 90, *player* 90, *slayer* 16, *payer* 3.

There are 9 words in *-een*, e. g. *seen*, among which only one may have a reduced pronunciation, namely *been*, and *been* is the most frequent word in *-een*, cf 'the Lorge magazine count': *been* 9870, *seen* 1402, *green* 1025, *queen* 342, *screen* 306, *keen* 168, *sheen* 13, *preen* 7, *spleen* 4 (while other words in *-een*, e. g. *ween* or *peen*, are not mentioned in the frequency dictionary).

There are 218 feminines in *-ess*, e. g. *princess*, among which only two underwent a reduction, namely *mistress* > *Mrs*. and *Miss*, and *Mrs*. and *Miss* are the most frequent feminines in *-ess*. For lack of space, I mention only the disyllabic feminines: *Mrs*. 3651, *princess* 254, *actress* 166, *hostess* 157, *duchess* 109, *mistress* 97, *waitress* 39, *countess* 22, *goddess* 21, *empress* 18, *heiress* 15, *laundress* 10, *tigress* 7, *abbess* 3, *huntress* 3, *priestess* 1.

There are 34 monosyllabic words in *-f*, e. g. *if*, among which only one shows an irregular voicing of the final consonant, namely *of*, and *of* is the most frequent word in *-f*, cf 'the Lorge magazine count': *of* 112601, *if* 14506, *half* 1984, *chief* 545, *roof* 417, *brief* 340, *golf* 278, *poof* 194, *leaf* 155, *beef* 148, *proof* 141, *grief* 137, *wolf* 121, *self* 115, *shelf* 100, *loaf* 89, *scarf* 88, *thief* 65, *deaf* 53, *gulf* 52, *wharf* 46, *calf* 44, *dwarf* 43, *chef* 39, *hoof* 35, *sheaf* 40, *surf* 21, *turf* 17, *waif* 10, *elf* 6, *coif* 5, *woof* 5, *reef* 4, *serf* 2.

There are 34 words in *-ill*, e. g. *still*, among which only one may have a reduced pronunciation, viz. *will*, and *will* is the most frequent word in *-ill*, cf 'the Lorge magazine count': *will* 9573, *still* 2356, *bill* 1403, *fill* 1137, *kill* 919, *till* 453, *thrill* 432, *ill* 341, *hill* 335, *chill* 310, *mill* 253, *skill* 104, *shrill* 83, *spill* 74, *drill* 60, *grill* 54, *sill* 46, *frill* 44, *jill* 42, *gill* 41, *pill* 30, *windmill* 23, *downhill* 18, *refill* 17, *standstill* 15, *uphill* 15, *trill* 14, *sawmill* 14, *distill* 13, *instill* 12, *quill* 8, *rill* 4, *whippoorwill* 3, *twill* 3.

There are 15 words ending in fricative + *-in*, e. g. *coffin*, among which only two underwent a reduction, viz. *cousin* and *basin*, and these words occupy the first and the second positions, cf 'the Thorndike general count': *cousin* 350, *basin* 160, *coffin* 90, *raisin* 90, *dolphin* 50, *muffin* 28, *assassin* 18, *paraffin* 18, *resin* 18, *toxin* 18, *dauphin* 14, *rosin* 14, *elfin* 12, *regamuffin* 6, *griffin* 4.

There are 12 monosyllabic words in *-ine*, e. g. *line*, among which only one underwent a reduction, viz. *mine* > *my*, and *my* is more often used than any word in *-ine*, cf 'the Lorge magazine count': *my* 22184, *line* 1498, *mine* 1119, *fine* 1078, *nine* 468, *shine* 328, *dine* 326, *pine* 172, *wine* 156, *vine* 119, *whine* 75, *thine* 5, *sine* 2.

There are 700 derivatives in *-iness*, e. g. *business*, among. which only one was shortened, viz. *business*, and *business* is the most frequent word in *-iness*, cf only several examples from 'the Thorndike general count': *business* 700, *happiness* 300, *weariness* 90, *readiness* 57, *loneliness* 28, *loveliness* 18, *greediness* 14, *friendliness* 12, *steadiness* 12, *unhappiness* 8, *tardiness* 7.

There are 36 words in *-ire*, e. g. *fire*, among which only one underwent an irregular reduction, viz. *sire* > *sir*, and, from the point of view of frequency, *sir* occupies the second position, cf 'the Lorge magazine count': *fire* 1319, *sir* 876, *tire* 865, *desire* 779, *require* 594, *wire* 449, *entire* 406, *inquire* 288, *admire* 257, *hire* 248, *acquire* 221, *retire* 165, *inspire* 154, *empire* 89, *dire* 30, *attire* 27, *sapphire* 25, *perspire* 17, *spire* 17, *conspire* 16, *aspire* 15, *mire* 14, *esquire* 14, *bonfire* 14, *expire* 13, *satire* 12, *afire* 10, *squire* 9, *vampire* 9, *umpire* 8, *sire* 7, *wildfire* 6, *transpire* 5, *quire* 2, *ire* 2, *grandsire* 1.

There are 11 monosyllabic words in *-one*, e. g. *tone*, among which only one underwent

a monophthongization, viz. *gone*, and *gone* is the most frequent word in *-one*, cf 'the Lorge magazine count': *gone* 1859, *tone* 536, *bone* 393, *stone* 386, *phone* 272, *zone* 51, *throne* 50, *drone* 42, *lone* 38, *cone* 24, *prone* 19.

According to Berndt (1960: 132), 'früher als in starktonigen Wörtern gleicher Struktur schwindet ausl. *-ə* in im Satz schwächer akzentuierten Wortformen… *sōn* (< ae. *sōna* "bald")'. In reality, the irregular sound change of *soon* is due to frequency because *soon* is more often used than any word in *-oon*, cf 'the Lorge magazine count': *soon* 1445, *afternoon* 1033, *moon* 285, *noon* 236, *teaspoon* 211, *tablespoon* 154, *spoon* 115, *honeymoon* 110, *saloon* 95, *balloon* 69, *coon* 57, *cartoon* 25, *boon* 24, *maroon* 20, *macaroon* 17, *loon* 15, *croon* 14, *cocoon* 13, *forenoon* 11, *lagoon* 11, *dragoon* 10, *baboon* 9, *platoon* 7, *swoon* 5, *harpoon* 4, *raccoon* 3, *racoon* 3, *buffoon* 2, *monsoon* 2.

Wełna (1978: 40) claims that 'the development of /o/ before /rd/ is not clear. The forms with lengthened /o/, like LOE *bōrd* 'board', *fōrd*, *hōrd* 'hoard' and LNthb **swōrd*, seem to have survived as late as ENE and the existence of the long vowel is confirmed by the spelling *oa* in MoE *board*, *hoard*, which however indicates an earlier /ɔ:/, not /o:/… LOE *wōrd* was later replaced by its variant with short /u/.' This shortening is due to frequency because *word* is more often used than the other words, cf 'the Lorge magazine count': *word* 2845, *board* 825, *sword* 91, *ford* 89, *hoard* 22.

There are 9 monosyllabic words in *-our*, among which only one may show a reduction of *-our* to [ə], viz. *your*, and *your* is the most frequent word in *-our*, cf 'the Lorge magazine count': *your* 9052, *our* 7599, *hour* 2485, *four* 1637, *pour* 556, *flour* 396, *tour* 149, *sour* 102, *scour* 20.

There are 6 words in *-over*, e. g. *clover*, among which only one may have a reduced pronunciation, viz. *over* > *o'er*, and *over* is the most frequent of these words, cf 'the Lorge magazine count': *over* 7520, *moreover* 153, *clover* 29, *drover* 6, *plover* 3, *rover* 2.

According to Jespersen (1922: 259), *fellow* 'in careless everyday pronunciation is often made [felə], in novels, etc., written *feller*, *fella'*. This reduction is to be accounted for by frequency because, among disyllabic words in *-ow*, *fellow* occupies the second position, cf 'the Lorge magazine count': *window* 1564, *fellow* 860, *shadow* 491, *widow* 181, *pillow* 161, *elbow* 134, *sorrow* 130, *eyebrow* 115, *meadow* 70, *willow* 47, *rainbow* 45, *arrow* 39, *burrow* 37, *harrow* 27, *barrow* 20, *billow* 19, *furrow* 17, *sparrow* 11, *hedgerow* 10, *tallow* 6, *minnow* 2.

There are 7 numerals in *-teen*, e. g. *thirteen*, but the numeral *ten*, which, from the etymological point of view, is identical with *-teen*, underwent a reduction, and *ten* is used more often than all numerals in *-teen*, cf 'the Lorge magazine count': *ten* 1260, *fifteen* 410, *eighteen* 215, *sixteen* 194, *fourteen* 143, *seventeen* 139, *nineteen* 109, *thirteen* 92.

For more examples see Mańczak 1987.

8. IRREGULAR SOUND CHANGE DUE TO FREQUENCY IN MORPHEMES

It takes place in formative morphemes, e. g. the German suffix *-lich*, which occurs in many adjectives, is subject to a reduction only in the two most frequently used derivatives of this type, namely *welch* and *solch*. However, irregular sound change due to frequency

occurs in inflectional morphemes considerably more often. This is due to the fact that inflectional morphemes are more frequently used than derivative ones. Here are some examples.

The opinion on the origin of the weak preterite in the Germanic languages is not unanimous: some consider it to be derived from the 2nd person aorist of the middle voice, others, from the verb corresponding to Ger. *tat*. In the light of the theory of irregular sound change due to frequency, the latter hypothesis should be considered the correct one. In Gothic, the conjugation of the preterite indicative and optative was the following:

	Indicative	Optative
Singular	*nasida*	*nasidēdjau*
	nasidēs	*nasidēdeis*
	nasida	*nasidēdi*
Plural	*nasidēdum*	*nasidēdeima*
	nasidēduþ	*nasidēdeiþ*
	nasidēdun	*nasidēdeina*
Dual	*nasidēdu*	*nasidēdeiwa*
	nasidēduts	*nasidēdeits*

The distribution of forms with and without reduplication is the following: (1) the less frequent optative displays reduplication in all its attested forms, whereas the more frequent indicative does not show it in all the attested forms; (2) within the indicative forms, the less frequent plural and dual exhibit reduplication, but the more common singular does not. Thus, everything suggests that, originally, the reduplication existed in the singular preterite indicative, and its disappearance should be accounted for by an irregular sound change due to frequency, which first attacked the forms used most often and only then the forms used less commonly. This resulted in the state known from the Germanic languages attested later than Gothic, where there is no trace of any reduplication in the forms of the weak preterite. It is understood that the weak preterite exhibits other unclear points, but this often happens when irregular sound change due to frequency operates. If they had not known Latin, the comparativists would have maintained that the forms of the perfect Fr. *chant-a*, It. *cant-ò*, and Rum. *cînt-ă* derive from three different forms with asterisks. However, it is known that all these forms derive from one form *cant-āvit*, and the variation *chant-a*, *cant-ò*, *cînt-ă* is to be explained by the fact that the reductions due to frequency may manifest themselves in different ways, cf the Old High German counterparts of the modern *und*, quoted above.

Another example: in Middle High German in some dialects, the *-n* of the infinitive disappears, e. g. *nëmen* > *nëme*. A similar change has taken place in English, where a difference exists between e. g. *to give* and the participle *given*. This change is also due to frequency, which is proved by the fact that infinitives without *n* (typical both of strong and of weak verbs) are more often used than participles with *n* (only typical of strong verbs). In the same way, frequency accounts for irregular simplification of a geminate in the Old High German gerunds of the type *nëmanne* 'zu nehmen' > *nëmane*.

Further example. In Gothic and in Old High German, the declension of the *ā*-stem nouns was of the following shape:

			Gothic	Old High German
Sing.	Nom.	*-*ā*	*giba* +	*geba* +
	Acc.	*-*ām*	*giba* +	*geba* +
	Gen.	*-*ās*	*gibōs*	*geba, gebu* +
	Dat.	*-*āi*	*gibái*	*geba, gebu* +
Plur.	Nom.	*-*ās*	*gibōs*	*gebā* +
	Acc.	*-*āns*	*gibōs*	*gebā* +
	Gen.	*-*ōm*	*gibō*	*gebōno*
	Dat.	*-*āmis*	*gibōm*	*gebōm*

As is known, the Indo-European **ā and *ō* result in **ō* in Proto-Germanic. Therefore, the development of the forms not marked by crosses is regular. In historical grammars, this double development is accounted for by the existence of the acute and the circumflex intonation in Proto-Indo-European. This explanation gives an impression of an *ad hoc* explanation for two reasons: (1) the distribution of regular and irregular endings in Gothic differs considerably from that of regular and irregular endings in Old High German; (2) everything indicates that the Balto-Slavic intonation arose independently of Greek; therefore there is no proof that any intonation existed in proto-Indo-European. For these reasons, the irregular endings of the Gothic and OHG *ā*-stem nouns are to be accounted for on the basis of their frequency, which is proved by the fact that, both in Gothic and in Old High German, the irregular development occurs in the more frequently used endings, since it is known that (a) the singular is used more often than the plural, (b) the nominative and the accusative are used more often than the dative and the genitive. As a parallel, we may cite the fact that, in the frequently used Latin nominative singular of the type *tabul-ă*, the final vowel underwent an irregular shortening, whereas, in the less frequently used ablative singular *tabul-ā*, the old length was preserved.

Still another example. It has been asserted that, in Old High German, in the final syllable, Proto-Germanic **a* disappeared earlier than Proto-Germanic **i* and **u*, which means that e. g. OHG *tag* is as regular as OHG *wini* or *sunu*. In my opinion, this assertion should be doubted for two reasons:

(1) The disappearance of final unstressed vowels occurs in various languages, but I do not know a language where the final unstressed *a* (which is considerably wider than *i*, *u*) disappeared earlier than *i*, *u* (whereas the disappearance of *i*, *u* prior to the disappearance of *a* is often found).

(2) In Old High German, there are some words which are not *o*-stem nouns, and which end in *a*, e. g. *ana* (> *an*), *aba* > *ab*, *unta* (> *und*), *fona* (> *von*). The majority of these words derive from words ending in **a* or **o* in Proto-Indo-European: *ana* < **ana*, *aba* < **apo*, *unta* < **nta*. Since it is known that Proto-Indo-European **a* and **o* merge into **a* in Proto-Germanic, the question arises of how to reconcile the fact that the Proto-Indo-European **a*, **o* were preserved in OHG *ana*, *aba*, or *unta*, and the fact that the ending **-o-s* in the nominative singular of the *o*-stems disappeared in Old High German, which resulted in the nouns of the type *tag*.

In my view, Old High German words of the type *ana*, *aba*, *unta* show a regular change of the final unstressed Proto-Germanic **a* (< Proto-Indo-European **a*, **o*), whereas the disappearance of **-o-s* in the nominative singular of the *o*-stem nouns is to be accounted for

by an irregular sound change. To put it differently, the final vowel disappeared irregularly in the frequently used *o*-stem nouns (OHG *tag*), whereas it was regularly preserved in the less often used *i*- or *u*-stems (OHG *wini*, *sunu*). Such an interpretation of these phenomena in Old High German is supported by parallels drawn from outside the Germanic languages. In Old Church Slavic, the *i*- and *u*-stems show a regular development (*gost-ĭ*, *syn-ŭ*), but the masculine *o*-stem nouns show an irregular reduction (*grad-ŭ*), whereas the less frequently used *o*-stem neuters exhibit a nearly regular development (*lět-o*). A similar situation occurs in Lithuanian. Although no difference exists between the *o*-, *i*-, and *u*-stem nouns (*vilk-as*, *ant-is*, *turg-us*) in the literary language, there are dialects where the reduction takes place in the *o*-stems (*vilk-s*), whereas the development is regular in the *i*- and *u*-stems. An analogous case occurred in Old Prussian, where the more frequently used *o*-stem masculines exhibited both the full and the reduced endings (*deiw-as* and *deiw-s*), whereas the ending was always regular in the *o*-stem neuters (*assar-an*).

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Allatum die 4 mensis Novembris Anno 2009