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THE ETYMOLOGY OF INTERNATIONALISMS
Evidence from German and Slovak

Abstract   In the etymological information for a word in a dictionary, the first question to be answered is whether the word is a borrowing or the result of word formation. Here, we consider this question for internationalisms ending in *-ation* in German and in *-ácia* in Slovak. In German, *-ation* is a suffix that attaches to verbs in *-ieren*. For these verbs, it is in competition with *-ung*. In Slovak, *-ácia* is a suffix that attaches to bases of Latin or Greek origin. The corresponding verbs are often backformations. Most Slovak verbs also have a nominalization in *-nie*. In order to investigate to what extent the nouns in *-ation* or *-ácia* are borrowings or derived from the corresponding verbs in German and Slovak, we took a random sample of English nouns in *-ation* for which OED gives a corresponding verb. For this sample, we checked whether the cognate noun in *-ation* or *-ácia* is attested in standard dictionaries and in corpora. Then we did the same for the corresponding verbs and the nouns in *-ung* or *-nie*. Finally, we checked the frequency of these words in DɛRɛKo for German and SNK for Slovak. On this basis, we found evidence that *-ation* in German has a slightly different status to *-ácia* in Slovak. This status affects the relationship to the corresponding verbs and to the nouns in *-ung* or *-nie*. Such generalizations are important as background information for specifying etymological information in dictionaries, especially for languages where first attestations dates are not readily available.

Keywords   Borrowing; word formation; reanalysis

1.   The suffixes *-ation* in German and *-ácia* in Slovak

In providing etymological information in dictionaries, a central question is whether the word in question is a borrowing or the result of word formation. Here, we will study this question for internationalisms that are marked by the suffix illustrated in (1).

(1)   a.   communication
      b.   Kommunikation
      c.   komunikácia

Internationalisms, as discussed for instance by Braun (1990) and Waszakowa (2003), are words that appear in different languages from different language families, as (1a) from English and French, (1b) from German, and (1c) from Slovak. The suffix in (1), which appears as *-ation* in English, French and German, and as *-ácia* in Slovak, can be traced back to Latin. However, as ten Hacken/Panocová (2022) show, it is not itself a suffix in Latin.

The reason for studying internationalisms such as (1) is that their fairly recent emergence gives the opportunity to study the question of whether they are the result of borrowing or word formation on the basis of documented sources. In English, OED (2000–2022) gives important information by dating the examples. First attestation dates can be used to support the hypothesis of borrowing or word formation as their source, as illustrated by ten Hacken/Panocová (2022). Here, we will focus on German and Slovak, two languages for which resources in the form of large corpora and scholarly dictionaries are available, but where first attestation dates of words have not been systematically documented.

The suffix *-ation* in German is a nominalizing suffix attaching to verbs with an infinitive in *-ieren* (cf. Fleischer/Barz 2012, pp. 242 f.). For these verbs, it is in competition with *-ung*. The

suffix *-ung* has a much broader range of application, including also verbs with a different infinitive ending, e.g. *Leistung* ('performance') from *leisten* (cf. Fleischer/Barz 2012, pp. 225–230). In addition, all verbs in German have a nominalized infinitive. Whereas nominalized infinitives generally only have a process reading, nominalizations in *-ation* and *-ung* can also have further readings. Thus, (1b) can refer to the transmission of information, but also to the information that is transmitted. Stem conversion, e.g. *Vergleich* ('comparison') from *vergleichen* ('compare'), does not occur for verbs in *-ieren*, so that it does not constitute a competition for the suffix *-ation.*

In Slovak, *-ácia* is the suffix corresponding to *-ation.* In the Slavic linguistic tradition, it is labelled as an international suffix. It is understood that internationalisms containing it are of Latin or Greek origin and they are sometimes called neologisms of Neolatin descent (Buzássyová 1992, p. 89; Horecký et al. 1989, pp. 130–132). For (almost) all Slovak verbs, it is possible to form a noun in *-nie.* Thus, for nouns in *-ácia* with a verb in *ovať*, there is a systematic synonymy between the nouns in *-ácia* and in *-nie.*

Both in German and in Slovak, many nouns of the type in (1) are borrowings. From the second half of the 20th century, these borrowings are usually from English. Earlier borrowings in German are often from French, whereas in Slovak, Latin often served as the source.

2.   Data collection

For our study, we collected German nouns in *-ation* and Slovak nouns in *-ácia.* As our purpose was to compare the two languages in this respect, we did not use German or Slovak as the starting point for our collection of data, but we used a third language. We chose English as a starting point, because the documentation available in OED (2000–2022) provides detailed information and possibilities of retrieval that are not available for many other languages.

In OED, it is possible to retrieve all nouns in *-ation.* For these nouns, we checked whether a corresponding verb is recorded in OED. For our pilot study, we took a randomized sample of 200 nouns in *-ation* with a corresponding verb. For these nouns, we asked native speakers of German and Slovak to translate them and look in particular for cognates in *-ation* and *-ácia.* The attestation and frequency of these nouns was then verified in monolingual dictionaries and corpora. For German, we used Duden (2022) and DeReKo (W corpus). For Slovak, the main dictionary is KSSJ (2003) and the corpus is SNK. In addition, we recorded the attestation and the frequency of the corresponding verb and the competing derivations, i.e. the one with *-ung* in German and with *-nie* in Slovak. On the basis of English *organization*, the German triple in (2) and the Slovak one in (3) were found.

(2)   a. Organisation
       b. organisieren
       c. Organisierung

(3)   a. organizácia
       b. organizovať
       c. organizovanie

An important condition recorded in the sample is that of cognate nouns. For *evaporation*, the most common translation in German is *Verdunstung* and in Slovak *vyparovanie.* In such cases, these nouns and their corresponding verbs were recorded in our sample, but we also considered whether the cognates *Evaporation* in German and *evaporácia* in Slovak occurred

in the dictionaries and corpora. In this case, both cognates are attested, although they are less frequent than the non-cognate translations.

3.   Analysis of the Slovak data

In the presentation of the analysis, we will start with Slovak. The reason for this will become clear later.

Of the 200 English nouns in *-ation* in our sample, 67 have a cognate Slovak noun in *-ácia* of the type in (3a) that is recorded in KSSJ (2003). This may seem a poor result, but we have to consider that the 200 English nouns are a randomized sample over the nouns in *-ácia* recorded in OED (2000–2022). The only criterion is the recording of a corresponding verb. This means that there are many rare and obsolete nouns in the sample. In fact, there are Slovak cognates such as *lignifikácia* ('lignification') corresponding to nouns that have no occurrences in COCA (2008–2019). In addition, 45 predicted cognates could be found in SNK or by a search on the web. For other cases, Slovak only has non-cognate equivalents, e. g. *prevaha* ('predomination').

As a next step, we considered the verbs in *-ovať*, as in (3b). Table 1 gives the correlation between the recording of the cognate noun and of the corresponding verb in *ovať*.

	Noun in *-ácia* in KSSJ (2003)	**Noun in *-ácia* in corpus**	**No noun in *-ácia* recorded**
Cognate verb in KSSJ (2003)	***41***	*2*	*1*
Cognate verb in corpus	18	23	0
No cognate verb	8	20	87
Total	67	45	88

**Table 1:**   Correlations between Slovak nouns in *-ácia* and corresponding verbs in *-ovať*

In (3a–b), we saw an example where both the noun in *-ácia* and the corresponding verb are recorded in KSSJ (2003). An example where the noun is recorded and the verb only found in the corpus is *inicializácia* ('initialization') and *inicializovať*. For *flagelácia* ('flagellation'), no cognate verb could be found. Table 1 shows that the verb in *-ovať* is strongly dependent on the noun in *-ácia*. Lexicographers also tend to record both the noun and the verb or only the noun rather than only the verb. If the noun in *-ácia* is used but not recorded in the dictionary, this makes the appearance of the verb in *-ovať* more likely, but it is generally not in the dictionary.

Let us now turn to the nouns in *-nie*, as in (3c). The status of these nouns is determined by their largely predictable form and meaning. The relationship between a noun such as (3c) and its corresponding verb in (3b) can be compared to, for instance, the formation of adjectives in *-able* or nouns in *-ing*. In the same way as many English dictionaries will not record them or only give them as run-on entries, dictionaries of Slovak rarely record nouns in *-nie*. For our sample, KSSJ (2003) only contains entries for 5 cognate nouns in *-nie*. For all of these, both the verb in *-ovať* and the noun in *-ácia* are in the dictionary as well. The dependence on the verb is further illustrated by the fact that for all nouns in *-nie* attested in the corpus or on the web also the verb is attested. On this basis, we can safely conclude that the noun in *-nie* occurs only after the formation of the verb.

These conclusions are in accordance with earlier research which did not use corpus data. Furdík (1978, p. 112) proposes that nouns in *-ácia* were borrowed first. Verbs that were originally derived from these nouns were analysed as motivating the nouns when Slovak speakers became sensitive to the systematic nature of the relation. Furdík calls this *remotivation*. Also Buzássyová (1983, p. 270) observes that the verbs in *-ovať* and the nouns in *-nie* were formed later. They call the verbs *backformations*.

4. Analysis of the German data

As explained in section 1, the situation in German is more complex than in Slovak, because of the different status of the competing suffix *-ung*. Whereas in Slovak, nominalization with *-nie* is highly regular, in a way comparable to the formation of participles, German *-ung* has a degree of irregularity that is more typical of word formation rules. The correlations between the cognates recorded in dictionaries and found in DEREKO are represented in Figure 1.
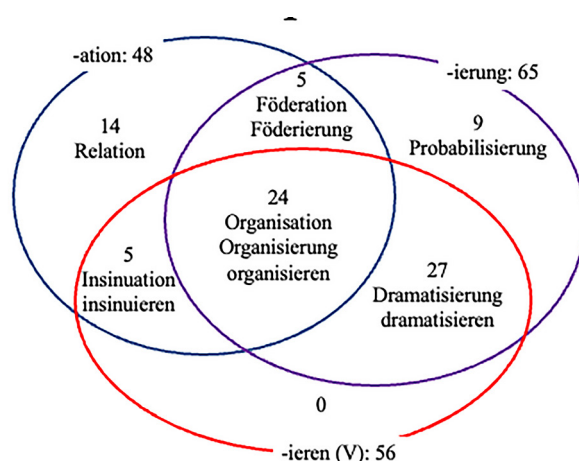
Fig. 1: Correlations between nouns in *-ation*, nouns in *-ierung* and verbs in *-ieren* in German

In Figure 1, the nouns in *-ation* are represented by a blue oval intersecting with the purple oval for the nouns in *-ierung* and the red oval for the verbs in *-ieren*. The numbers in Figure 1 refer to the number of cognates found for the English set of 200 nouns in *-ation* that served as our starting point. There are, for instance, 27 English nouns for which a cognate noun in *-ierung* and a corresponding verb in *-ieren* was found, but no noun in *-ation*. For each class, an example is given. The totals for each of the three sets are indicated as well. That there are no verbs without a nominalization is a consequence of our taking nouns as a starting point.

A first point to be made is that in German there are considerably fewer English nouns for which any cognates were found at all. This may not be immediately obvious from Figure 1, but 116 out of 200 English nouns are not in the figure at all. This compares with 87 for Slovak in Table 1. This number of 116 includes 5 cases where German uses a non-cognate Latinate stem. An example is *anatomization*, for which German has *Präparation* with *präparieren* as a verb and *Präparierung* as an alternative nominalization. In other cases, no Latinate stem is used, e.g. *Vorverurteilung* ('precondemnation').

The most interesting aspect of Figure 1 is what it shows about the competition between *-ation* and *-ierung*. There are about twice as many cognate nouns in *-ierung* without a cor-

responding noun in *-ation* as there are nouns in *-ation* with a corresponding noun in *-ierung* (36 against 19). The number of cases where both were found is in between (29). It is striking that for the cases with only a noun in *-ation*, fewer than a third have a corresponding verb (5 out of 19), whereas for the cases with only a noun in *-ierung*, three quarters have such a verb (27 out of 36). This suggests that nouns in *-ierung* have a stronger connection to the verb than nouns in *-ation*.

A complex notion that is presupposed in the data represented in Figure 1 is that of a word being *established* in the language. As argued by ten Hacken (2020), there is no empirical object corresponding to named languages. We use *German* to refer to the language of a speech community, but its cognitive basis can only be found in individual speakers. Moreover, the mental lexicon of an individual speaker is highly structured, with some items much more prominent than others. This means that the property *established in German* is gradual in two respects. On one hand, we could try to find out how many speakers classified as members of the German speech community know a particular word. On the other hand, we could try to find out what the position of the word in each speaker's mental lexicon is. Setting thresholds on these two measures is necessarily arbitrary at least to some extent. At the same time, measuring these two parameters is a complex task. Therefore, using frequency in a corpus as an approximation is a convenient patch.

Frequency in a corpus is related both to the proportion of speakers who know a word and to the prominence this word has for them. However, the relationship is indirect. A corpus collects performance data for many speakers, but for some speakers, the chances for their utterances or writings to become part of a corpus are considerably greater than for others. The prominence of a word is reflected to some extent in its frequency of use, but it is difficult to express the relationship between prominence and frequency in a non-circular way.

With these caveats, we analysed the relative frequency of the corresponding words as represented in Figure 1. We first considered the relation between the verbs in *-ieren* and the corresponding nouns in *-ation*. In this analysis we included cases such as *Präparation* ('anatomization') mentioned earlier, so that there are 32 pairs. Of these, there are 2 for which neither the verb nor the noun occurs in the W corpus of DᴇRᴇKᴏ. For the remaining pairs, in 10 cases the noun in *-ation* is more frequent and in 20 cases the verb in *-ieren*. An example of a case where the noun is more frequent is *Zivilisation* ('civilization'), which is 2.6 times more frequent than *zivilisieren* ('civilize'). An example of a case where the verb is more frequent is *degenerieren* ('degenerate'), which is 3.6 times more frequent than *Degeneration* ('degeneration').

Then we turn to the relation between the verbs in *-ieren* and the corresponding nouns in *-ierung*. Again including cases such as *Präparierung* ('anatomization'), we have 55 pairs here. Of these, 9 pairs have no occurrences for either the verb or the noun in the W corpus of DᴇRᴇKᴏ. Of the remaining pairs, the noun in *-ierung* is more frequent in 12 cases and the verb in *-ieren* is more frequent in 34 cases. An example of a case where the noun is more frequent is *Dezentralisierung* ('decentralization'), which is 2.3 times as frequent as *dezentralisieren* ('decentralize'). An example of a case where the verb is more frequent is *fixieren* ('fixate'), which is 7.7 times as frequent as *Fixierung* ('fixation'). We see then, that both for nouns in *-ation* and for those in *-ierung*, the verb tends to be more frequent than the corresponding noun.

A legitimate question is of course to what extent the higher frequency of the verb is caused by the fact that the frequency for the nominalizations is divided over two forms. Therefore,

we also compared the frequency of the verb in *-ieren* in relation to the combined frequency of the nouns in *-ation* and *-ierung*. There are 60 relevant sets to be compared, of which 7 have no occurrences of any noun or verb in the W corpus of DeReKo. In 22 cases the combined frequency of the nouns is higher than that of the corresponding verb, whereas in 31 cases the verb is more frequent. These figures suggests that there is indeed a less strong predominance of the verb than expected on the basis of the figures for the individual nominalizing suffixes.

In order to interpret the figures for the combination of the two nominalization processes and relate them to the figures of the individual processes, it is worth having a closer look at the competition between *-ation* and *-ierung*. There are 33 cases where the same stem is used for a noun in *-ation* and a noun in *-ierung*. In 2 cases, neither noun occurs in the W corpus of DeReKo. In 5 cases, the noun in *-ierung* is more frequent. An example is *Elektrifizierung* ('electrification'), which has 9,845 occurrences as against 57 for *Elektrifikation*. In 26 cases, the noun in *-ation* is more frequent. An example is (2a, c), where *Organisation* has 801,422 occurrences and *Organisierung* 1,300. The difference in frequency is typically high. The noun in *-ierung* does not occur in the corpus at all in 6 cases and the frequency is between 1 and 10 in 10 cases. A frequency of 10 corresponds to 0.001 per million words.

Returning to the question of whether the split between *-ation* and *-ierung* affects which of the noun or the verb is more frequent, we can be confident to give a negative answer for our sample. The closest call is the case in (4).

(4) a. Isolation   53,744
     b. Isolierung   20,340
     c. isolieren   115,983

The two nouns in (4a–b) both mean *isolation*. The range of their meanings is not quite identical, but there is a large overlap. They are both established, although the noun in *-ation* is clearly more frequent. The verb in (4c) is, however, much more frequent than the two nouns combined.

The fact that the combination of nouns in *-ation* and *-ierung* yields a less striking contrast between nouns and verbs requires a different explanation. We can summarize the figures as in Table 2.

	Noun more frequent	**Verb more frequent**	**No occurrences**
Noun in *-ation* vs. Verb	***10***	*20*	*2*
Noun in *-ierung* vs. Verb	12	34	9
Sum of nouns vs. Verb	22	31	7

Table 2: Overview of frequency comparisons of nouns in *-ation* and *-ierung* with corresponding verbs

The competition between *-ation* and *-ierung* means that usually one of the two establishes itself, while the other one remains marginal. In Table 2, this is reflected by the fact that in the first column, i.e. the cases where the noun is more frequent than the verb, the number for the combination of the nouns is the sum of the numbers for the individual nouns being more frequent than the verb. This contrasts with the second column. A good example is the triple in (5).

(5) a. Zivilisation   57,668
     b. Zivilisierung   1,353
     c. zivilisieren   21,807

As indicated by the frequencies in (5), the established noun corresponding to *civilization* is (5a). The alternative noun (5b) is used only in the process reading. It only has a chance because in some contexts, it is desirable to foreground this reading. The noun (5a) is more than twice as frequent as the verb (5c). The noun (5b) is much less frequent than the verb. What is reflected in the column with more frequent verbs in Table 2 is then that the comparison between (5b) and (5c) disappears as an item to be counted when we combine the values for the two nouns in (5a) and (5b).

Another point to be considered here is the use of non-cognate nouns instead of the nouns in *-ation* or *-ierung*. An example is the triple for *petrification*, given with its frequencies in (6).

(6) a. Petrifikation   5
     b. Petrifizierung   26
     c. Versteinerung   3,466

Although both forms (6a–b) are attested, they are definitely rare and much less common than (6c). The problem with counting such cases as (6) is that it is often not easy to establish that the native form has exactly the same lexical meaning. In (6) this is relatively obvious, but (7) is less straightforward.

(7) a. Annotation   151
     b. Annotierung   4
     c. Anmerkung   58,088

Both nouns (7a–b) are attested as equivalents to *annotation*. The difference between them is similar to the one in (5a–b), but they are much rarer. The question is to what extent the use of the native equivalent (7c) is responsible for the low frequency of (7a–b). Collins (1999) gives "note" and "remark, comment" as translations of *Anmerkung*, but "Anmerkung" as a translation of *annotation*.

With these caveats in place, it is still worth considering to what extent alternative words are used for nouns in *-ation*. In fact, only 10 of the 48 nouns in *-ation* do not have a synonym without the cognate stem and in 33 cases, this synonym is more frequent. The frequencies in the examples (6–7) are not at all untypical.

The German data suggest that nouns in *-ation* are relatively marked. For the 200 English nouns in our sample, only 48 have a cognate noun in *-ation* and in most cases, a more frequently used synonym without the cognate stem exists. Nouns in *-ierung* are competing with corresponding nouns in *-ation*. The nouns in *-ierung* often prevail in frequency and are more often in correspondence with a verb in *-ieren*.

5.   Frequency data for Slovak

In the discussion of the Slovak data in section 3, we only considered the attestation of cognate verbs and nouns in KSSJ (2003) and SNK. As we used frequency data in our analysis of the corresponding German cases, it is legitimate to ask to what extent taking into account frequency data for Slovak modifies the conclusions we reached earlier. Panocová (2017) presents an earlier study of the frequency of nouns in *-ácia* and their corresponding verbs

in *-ovať* and nouns in *-nie*. This study was based on nouns in *-ácia* selected from the frequency lists of SNK.

We first considered the relation between the verbs in *-ovať* with a Latinate stem and the corresponding nouns in *-ácia*. For Slovak, we not only looked for these in the dictionary and in the corpus, but also by means of a general web search. The web search was not used to establish the frequency of a word, but if the predicted word occurs in a Slovak text, it is taken as an attested word. There are 90 relevant verbs, of which 34 have no occurrences in SNK. The verbs that do not occur in SNK are sometimes recorded in KSSJ (2003), e.g. *inundovať* ('inundate'). For 85 verbs, we found a corresponding noun in *-ácia* (cf. Table 1). In 36 cases, the noun is more frequent than the verb. In addition, in 25 cases, only the noun is attested in SNK. In 18 cases, the verb is more frequent. In the remaining 6 cases, neither the verb nor the noun occurs in SNK. These data are in line with the hypothesis that the verbs in *-ovať* are often backformations, i.e. they depend on the noun in *-ácia*.

Then we turned to the relation between the verbs in *-ovať* and the corresponding nouns in *-nie*. We found 60 pairs of a Latinate verb in *-ovať* with a corresponding noun in *-nie*. This is a clearly lower number than the 85 pairs with *-ácia*. There are only 2 nouns with a higher frequency in SNK than the corresponding verb, *falšovanie* ('falsification') and *aprobovanie* ('approbation'). Interestingly, neither of these has an entry in KSSJ (2003), although the noun in *-ácia* and the verb in *-ovať* do. This is particularly remarkable in the case of (8).

(8)   a. falzifikácia   360
        b. falšovanie   7,223
        c. falšovať   2,165

Also in the case of (8), the frequency data are in line with the conclusion we drew in section 3 that nouns in *-nie* depend on the corresponding verb in *-ovať*.

Finally, we considered the cases where nouns of both types, *-ácia* and *-nie*, were in competition. There are 56 such pairs in our sample. For 49 of these, the noun in *-ácia* is more frequent. In 3 cases, neither noun is attested in SNK. Only 3 nouns in *-nie* are more frequent than the corresponding noun in *-ácia*. One of them is (8b). Another case is given in (9).

(9)   a. transportácia   1
        b. transportovanie 60
        c. transportovať   2,888
        d. transport   14,865

Although the noun in *-nie* in (9b) is more frequent than the one in *-ácia* in (9a), the established noun is (9d). Interestingly, KSSJ (2003) has entries for (9a, c–d), but not for (9b). It is also interesting to note that of the 56 nouns in *-nie* for which a counterpart in *-ácia* is attested in our sample, 34 have a frequency of at most 7 in SNK and only 6 a frequency over 160, which corresponds to 0.1 per million.

On this basis, it seems safe to conclude that nouns in *-ácia* have a very strong position in the Slovak lexicon. They generally seem to underlie the corresponding verb and have very little competition from other nouns. Nouns in *-nie* are implied by the verb and used in a way not unlike the nominalized infinitive in German. They are generally much less frequent, but they can be used to highlight the process reading, as in (3). There are only 2 cases in our sample where a different noun is used as a competitor for the noun in *-ácia*. One is given in (9d), the other is *detox*, a less frequent variant of *detoxifikácia* ('detoxification'). In both cases

we have a shortened form that is probably a loan from English. This suggests that once a noun in *-ácia* is in the lexicon, it excludes the formation of competing nouns.

6. Comparison of German and Slovak

When we compare the constellation of *-ation* in German and *-ácia* in Slovak, the first striking difference is the status of the competing suffixes, *-ung* in German and *-nie* in Slovak. In both languages, these suffixes have a wider distribution than the corresponding Latinate suffixes, i. e. they can apply to a larger set of verbs. However, *-ung* and *-nie* are different in a property that is often labelled *productivity*. We can say that *-ung* is less productive than *-nie*. On closer inspection, there is also another difference in productivity, one that directly affects *-ation* and *-ácia*.

Productivity of a morphological rule is an intuitively clear concept, which is, however, difficult to pin down exactly. Bauer (2001) gives an overview of the discussion. Here we will adopt Corbin's (1987, p. 176–178) analysis, which distinguishes three separate aspects, *régularité*, *disponibilité* and *rentabilité*. The first of these, *régularité*, refers to the extent that the form and meaning of the resulting word is predictable. The lack of this property is an important criterion for the inclusion of words in a dictionary. It is in this sense that Slovak *-nie* is more productive than German *-ung*. Whereas the Slovak noun in *-nie* can always be used and always has a process reading, the German noun in *-ung* is not always available and may also have other than process readings. The second type, *disponibilité*, answers the question whether a particular word formation process can be used to produce new words. A positive answer is a condition for using the process in an etymological account. Obviously, the availability of a rule may change over time and is dependent on individual speakers. The third type, *rentabilité*, refers to the quantitative aspect of productivity. It is the productivity-related information one can retrieve from a corpus. However, as observed by Baayen (1992), it is not the number of tokens for a particular word, but rather the number of types formed by a morphological process that should be taken as a basis, because a new type indicates the active use of the rule. Clearly, these three types are related to each other, but it is useful to maintain the distinction, because an increase in one type of productivity does not automatically result in an increase in the other types.

In Slovak, nouns in *-ácia* were generally borrowed. The data we collected support the traditional view formulated by Furdík (1978) and Buzássyová (1983) that the verbs in *-ovať* are based on the reanalysis of the borrowed nouns in *-ácia* as complex. For verbs in *-ovať*, a corresponding noun in *-nie* can be formed. This constellation is reflected in the attestation of nouns and verbs. The noun in *-ácia* is primary, the verb in *-ovať* depends on this noun and the noun in *-nie* depends on the verb. When a formation depends on another word, it is available for use whenever the need arises.

In German, nouns in *-ation* were also generally borrowed. However, their relation to the corresponding verbs in *-ieren* is not the same as in Slovak. The frequent occurrence of a pair of cognate verb in *-ieren* and noun in *-ierung* suggests that in many cases the verb in *-ieren* was borrowed independently. This suggestion is reinforced by the observation that in the majority of cases, the verb is more frequent than the corresponding noun. This means that in German, when a noun in *-ation* and a corresponding verb in *-ieren* both exist, they are connected in the mental lexicon, but it is not the case that the verb is formed automatically

when the noun exists. This also explains that *-ung* is much more prominent in German than *-nie* is in Slovak.

In conclusion, we can say that the etymology of internationalisms in *-ation* and *-ácia* is different in German and in Slovak. In Slovak, the data are compatible with the analysis that nouns in *-ácia* are generally borrowings and corresponding verbs are backformations, in German we have to assume that also many of the verbs in *-ieren* were borrowed. Therefore, they are etymologically not backformations based on the noun in *-ation*. The nouns in *-ation* may be analysed as derived from the verbs or as separate borrowings.

In formulating an etymology for a dictionary, it is often difficult to assess whether the word in question was borrowed or resulted from word formation. Therefore, it is important to have such general hypotheses in mind when deciding how to present its origin. Here we formulated some data-supported hypotheses that can be used as default assumptions in etymologies.

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