

Relational adjectives between syntax and morphology

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A relational adjective (RA) is an adjective that does not express a property, but rather a relation to a concept designated by a noun. It is a controversial issue whether RA+N combinations are compounds or syntactic phrases. If we adopt a definition of compound that takes the semantics as an important component, RA+N combinations should be analysed as compounds. If RA+N and N+N are both compounding, we might expect that languages that have both choose names for the corresponding concepts independently of each other, so that an RA+N in one language is randomly connected to the name for the same concept selected in another language. I tested this hypothesis by analysing German and Italian translations of Levi's (1978) list of 383 compounds illustrating her Recoverably Deletable Predicates (RDPs) and nominalization types. The analysis shows that there is a strong cross-linguistic correlation in the use of RA+N. This raises the question of how to explain the correlation. I argue that it cannot be explained by a translation bias or a semantic bias, but that it provides evidence for how the choice of a name in the naming process is influenced by a speaker's mental lexicon and how speech communities relate to such choices by individual speakers.

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1. Introduction

Relational adjectives (RAs) are adjectives such as *architectural*. They do not refer to a property, but express a relation to a corresponding noun. Typically, OED (2018 [1885]: *architectural*)¹ gives its meaning as 'of, relating to, or according to, architecture'. Over the years, it has been a controversial issue whether RA+N combinations such as *architectural monument* should be analysed as morphological objects (compounds) or syntactic objects (phrases). In §2, I will briefly outline the two positions and indicate why I will take the analysis as compounding as a starting point. Together with some general considerations concerning the definition of compounding, this leads to a hypothesis about the occurrence of RA+N combinations and their cross-linguistic correspondence, which serves as the main focus of this article. §3 gives some comparative data from English, German and Italian which can be used as a test for this hypothesis. As the data seem at least problematic for the hypothesis that RA+N combinations are unmarked compounds, §4 proposes a number of possible explanations. §5 summarizes the conclusions. In this article, I aim to contribute to this discussion by giving some quantitative evidence about the use of RA+N combinations in English, German and Italian.

¹ For references to the OED, I give the entry and in square brackets the year stated as the last general update for the entry. In some cases, readings or examples have been added in an OED entry without triggering a full update of the entry.

2. Relational adjectives and the limits of compounding

As an example of an RA, let us consider *architectural*. As illustrated in (1), this adjective has different meanings depending on the noun following it.

- (1) a. architectural heritage
- b. architectural staff
- c. architectural interest

The shared meaning component of the three occurrences of *architectural* in (1) is that it expresses a relation to the concept designated by the noun *architecture*. The nature of the relation depends on the noun. As such, *architectural* contrasts with qualitative adjectives as illustrated in (2).

- (2) a. rich heritage
- b. new staff
- c. strong interest

The contrast between RAs and other adjectives is not always as straightforward as in (1) and (2). In particular, many RAs have additional readings, as in (3).

- (3) a. commercial law
- b. commercial television

OED (2018 [1891]: *commercial*) gives the reading ‘having reference to or bearing on commerce’ for (3a), which is a typical description of the meaning of an RA. For (3b), OED gives a separate reading ‘paid for by the revenue of broadcast advertisements’, which only applies to radio and television. However, it is related to the meaning ‘looking for financial profit’, which has a more general application. In (3b) and related readings, *commercial* is not an RA.

A long-standing question is whether RA+N combinations such as (1) and (3a) should be considered compounds or not. The more traditional position on this is represented by Matthews (1974: 35), who discusses the Latin contrast in (4).

- (4) a. tribunus militaris ‘tribune_{nom.sg} military_{nom.sg}’
- b. tribunum militarem ‘tribune_{acc.sg} military_{acc.sg}’

The expression in (4) refers to a person of a particular rank in the ancient Roman army. The contrast between the nominative in (4a) and the accusative in (4b) is expressed both on the noun and on the adjective. For this reason, Matthews does not call such RA+N combinations *compound lexemes*, but *idioms*.

The opposite view is defended by Levi (1978: 15–48). Her argumentation is based on theoretical assumptions rooted in generative semantics. However, we can also take Levi’s (1978: 38) examples of the type in (5) as an argument without referring to generative semantics.

- (5) a. atomic bomb
b. atom bomb

Both expressions in (5) mean the same thing. OED (2018 [2008]) gives entries for both, with first attestations of 1914 for (5a) and 1921 for (5b). Both are quoted in the *Times* article reporting on the 1945 bombing Hiroshima. OED gives a slightly higher frequency (one class difference) for (5a), which is supported by a BNC (2007) frequency of 102 for (5a) as against 41 for (5b). Important is that both expressions are used and they refer to the same concept.

Depending on various theoretical assumptions, other arguments have been put forward for one position or the other. It is not my intention here to give a historic overview of this discussion, but it is good to consider some consequences of the persistence of both positions. The existence of two incompatible views of RA+N combinations does not mean that *compound* is a vague concept in which RA+N combinations are somewhat less typical than N+N combinations. As I argued in the case of the distinction between inflection and derivation in ten Hacken (2014), the question whether to have a terminological concept with a precise boundary depends on how linguists decide to use the relevant concept. For compounding, if we want to make claims about the concept, we need a definition that determines the extent of the concept. Such a definition is declared valid. A definition is not an empirical claim and it cannot have counterexamples. The only way to evaluate a definition is by assessing the usefulness of the concept it determines. Also the cross-linguistic validity of a definition cannot be evaluated on an empirical basis, but only argued for on the basis of the usefulness of the concept.

The choice between the two positions on the analysis of RA+N combinations can therefore not be based on empirical evidence alone. The question is whether we see *compound* as a primarily morphophonological concept or as a concept based on semantic considerations. In principle, both positions are coherent. Although the positions have here been illustrated on the basis of Matthews (1974) and Levi (1978), the choice for one of these positions does not entail a commitment to Matthews's Word-and-Paradigm morphology or Levi's generative semantics. In my view, there are at least two reasons why a more semantically oriented definition is to be preferred. First, I would argue that compounding is first of all interesting as a particular type of naming device. Taking the inflection-based criteria illustrated in (4) as more important than the semantic considerations applying to (5) would imply that compounds constitute primarily a superficial formal category. Second, cross-linguistic coherence is much bigger in semantic properties than in morphophonological properties. A well-known example of an often used criterion for compoundhood is stress. However, stress is notoriously language-specific and there is no cross-linguistic compounding stress pattern.

In ten Hacken (2013), I argue for a concept of compounding that is cross-linguistically valid and is based on its role as a naming device. The form and meaning of a compound arise from the interaction of two processes. One is the application of the compounding rule. The compounding rule takes two elements as input, the head and the non-head. The head is a lexeme and the non-head is categorially unspecified. The relationship between the two is not specified. Any restrictions at this stage are due to the meanings of the head and the non-head. The other process is onomasiological coercion. This is what happens in the confrontation between a potential name resulting from a word formation process and a concept for which a name is necessary. The outcome is that the concept to be named determines the meaning of the output of the word formation rule. In the case of

compounding, onomasiological coercion typically determines the semantic relation between the head and the non-head. However, it can also shift the meaning of a compound beyond what can be predicted on the basis of the compounding rule. For *spaceship*, the fact that it designates a vehicle that is not a ship is the result of onomasiological coercion.

In a definition that is based on semantic considerations, RA+N combinations are equally good as compounds as other compounds, such as N+N combinations. This implies that the choice between the two forms in (5) depends only on accidental properties of the use of these forms, not on the concept. This leads to the hypothesis in (6).

- (6) In two languages which have RA+N combinations and other compounding constructions, there is no correlation between the names chosen for the same concept.

In (6), I use *construction* in the pretheoretical sense of ten Hacken (1994), without any implications that I adopt Goldberg's (1995) construction grammar or Booij's (2010) construction morphology. The lack of correlation mentioned in (6) is of the type illustrated in the pairs in (7).

- (7) a. unleaded unverbleit
b. lead-free bleifrei

In (7), English and German adjectives are given for the meaning '(of petrol or other fuel) without added lead'. The English adjective is followed by the German adjective with the same morphological structure. (7a) and (7b) are the result of competing naming processes for the same concept. In English, *unleaded* is the standard form. BNC (2007) gives a frequency of 235 as against 56 for *lead-free*. Several of the latter but none of the former refer to a property of paint instead of fuel. OED (2018) gives a separate entry for *unleaded* [2017], whereas *lead-free* is only given among the combinations in the entry *lead* [1902]. In German, by contrast, *bleifrei* is the unmarked form. DeReKo (2018) gives 2105 occurrences for *bleifrei* as against 36 for *unverbleit*. Anyone who has used petrol stations in the UK and in German-speaking countries will have seen the resulting contrast in the designation on the pump. In view of (6), cases such as (7), where different strategies are chosen in different languages, are expected to occur approximately with the same frequency as cases where the strategies for two languages coincide, provided that the strategies are in general equally frequent in the two languages.

3. Relational adjectives in English, German, and Italian

In order to test the hypothesis in (6), we need data about names for the same concepts in different languages. The most obvious method for obtaining such data is collecting compounds in one language and translating them. In translation theory, the translation of individual words is controversial. However, the problems with such lexical translations arise especially where no lexical equivalent is available. Overviews of bilingual lexicography such as Adamska-Sałaciak (2013) and Fontenelle (2015) take the idea that bilingual dictionaries give translations as a starting point. The focus of their overviews is the question how bilingual dictionaries should treat cases where no direct equivalent exists or where additional information is required.

For the translation method to work, we need a monolingual list of compounds to start with. There are various ways to compile such a list. It would be problematic to choose the compounds individually. In order to test (6), we need a list of RA+N combinations and of other compounding constructions. Ideally, the list should neither be biased to individual heads or non-heads nor to individual semantic relations between them.

Given these constraints, the list Levi (1978: 279–284) gives as an appendix to her discussion of complex nominals is a reasonable choice. Levi's list contains 383 compounds. The list was compiled independently of the hypothesis to be tested here, so that there is no bias in this respect. One of Levi's theoretical points is that RA+N combinations are compounds. Therefore, the list contains both RA+N and N+N compounds. The purpose of the list is to illustrate the mechanism by which she proposes to account for the semantic relation between the head and the non-head. This mechanism involves different types of nominalization and nine Recoverably Deletable Predicates (RDPs). Nominalizations are appealed to when the head of the compound is deverbal. They are classified by the meaning of the result (act, product, agent, patient). RDPs account for all other non-lexicalized compounds. They are specified as CAUSE, HAVE, MAKE, USE, BE, IN, FOR, FROM and ABOUT. The first three RDPs can have either the head or the non-head as the subject. For several RDPs, Levi distinguishes different senses. Thus for FROM, one sense is 'produced from' (e.g. *olive oil*), another 'originating from' (e.g. *home remedy*). Each of these is illustrated with a number of compounds.

For our purposes, it is not necessary to commit to Levi's theoretical framework or to her analysis in order to use her list of compounds. Elsewhere, I argued against using systems for the characterization of the semantic relation between head and non-head of a compound as a basis for the classification of compounds (ten Hacken 2016: 211–214). This argument applies to any such system. The side effect of illustrating the semantic relations is, however, that we have a good degree of variation in these semantic relations. This, together with the extensive but still manageable size of the list, makes it a good basis for drawing conclusions about the validity of hypothesis (6).

For the research reported on in ten Hacken & Muigg (in press), Levi's list was translated into German and Italian. In the translation of the compounds, particular care was taken to consider the status of the expression in the target language. A central question in this context was to what extent there is an established name for the concept in German and in Italian. Where several possibilities exist and none is established, competing names are included. Determining whether an expression is established in the language is of course not an empirical question, because languages such as German and Italian are not empirical objects. However, standard dictionaries, large corpora and native speaker judgements were used to arrive at a reasonable approximation.

In Levi's list, approximately two thirds (257) are N+N and one third (126) RA+N combinations. There is one RDP for which all examples are N+N, FROM (e.g. *olive oil*). All other characterizations of semantic relations are divided between RA+N and N+N.

In German, compounding in the sense of the formation of N+N combinations is notoriously frequent. It is not surprising, therefore, to find that 289 of the items from Levi's list are translated by an N+N compound. With more than three quarters of the compounds translated as N+N, this construction is significantly more frequent in German than in English. Four semantic classes determined by RDPs are entirely covered by N+N compounds in German. They are illustrated in (8).

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|-----|----|-------------|---------------|--------------|
| (8) | a. | Nasenspray | nasal mist | FOR |
| | b. | Rohrzucker | cane sugar | FROM |
| | c. | Honigbiene | honey bee | y MAKE x |
| | d. | Blumenkranz | floral wreath | x MAKE y |

In (8), the German example is followed by the English item from Levi's list and the RDP characterizing the semantic class. In (8c-d), x is used for the non-head and y for the head of the compound.

Apart from the N+N compounds, there are also 40 RA+N combinations and 65 other translations. The numbers do not add up to 383, because there was no single translation for each of Levi's examples. In some cases, there was no equivalent established German translation as an N+N or RA+N. An example is *bird reproduction*. Although the components can be translated, *Vogel* ('bird') and *Fortpflanzung* ('reproduction'), actual German translations would use a paraphrase involving these two words rather than a compound. The compound *Vogelfortpflanzung* is a possible word, but it is not used. This is an example of an other translation. There are also cases in which we counted more than one German equivalent. An example is (9).

- | | | | |
|-----|----|--------------------------|--------------------------------------|
| (9) | a. | Polizeieinsatz | 'police operation' |
| | b. | polizeiliches Eingreifen | 'police _{ADJ} intervention' |

Both German expressions are established translations of *police intervention*, but they have slightly different meanings. In (9b), the unit of police is presented more as an agent, whereas in (9a), it is rather an instrument. There is also a difference in syntactic use, because (9a) is countable and (9b) not. In such cases, we counted both translations. (9b) also provides an example of an RA+N construction in German. Some more examples are given in (10).

- | | | | |
|------|----|-----------------------|------------------|
| (10) | a. | historisches Drama | historical drama |
| | b. | künstlerischer Leiter | artistic manager |

Even though in the sample determined by Levi's list, German has more N+N compounds than English, there are also cases where an English N+N compound is translated by a different construction in German. Two examples are given in (11).

- | | | | |
|------|----|-----------------------|------------------|
| (11) | a. | rührselige Geschichte | sob story |
| | b. | Professorinnen | women professors |

In (11a), a non-relational adjective is used in a lexicalized A+N expression. In (11b), a derivational rule adding the suffix *-in* is used to express what in English is expressed by the non-head *women*.

In order to test the hypothesis in (6), we do not only need the totals of the expressions according to the German mechanisms used, but also the extent to which they correspond to English RA+N and N+N expressions. Table 1 summarizes these figures.

Table 1: Translation of English N+N and RA+N compounds into German

German	N+N	RA+N	other	total
English N+N	226 (87.9%)	4 (1.6%)	27 (10.5%)	257
English RA+N	78 (60%)	38 (29.2%)	14 (10.8%)	130

Table 1 gives absolute figures and percentages. The percentages are relative to the totals given in the last column. As explained, there are more German translations than English originals. No obvious correlation between the use of other mechanisms in German and the opposition between N+N and RA+N in English can be observed, but the correlation between RA+N combinations in German and in English is striking. Whereas only a tiny minority of English N+N compounds is translated as RA+N in German, more than a quarter of English RA+N compounds is translated in this way. This casts doubt on (6).

Let us now turn to Italian. The position of compounding in Italian is very different to its position in German. Konecny & Autelli (2015) give an overview of the debate about this issue among Italian linguists. A common type of compound in Italian is illustrated in (12).

- (12) a. apribottiglie ‘open-bottles’, i.e. bottle opener
 b. portagioielli ‘carry-jewels’, i.e. jewellery box

In both examples in (12), the Italian expression has a V+N structure in which the N is interpreted as the object of the V and the entire expression designates an instrument for V-ing N. In ten Hacken (2010) I point out the similarity of this construction to English synthetic compounds, as indicated by the idiomatic translation in (12a). In (12b), the idiomatic translation takes a different naming motive, as *box* focuses on the nature of the object as opposed to its function, which is highlighted by the verb *portare* (‘carry’) in Italian.

When we compare the Italian construction in (12) and corresponding synthetic compounds in English, however, we find that they are not fully equivalent. In Italian, the construction requires that the noun is the object of the verb. In English, the head noun of the compound is derived from a verb. There is some pressure to interpret the non-head as the object of the verb, but this is not mandatory as in Italian. Some relevant examples are in (13).

- (13) a. night sleeper
 b. pressure opener

In (13a), *sleep* is intransitive so it is necessary to find a different interpretation. In fact, (13a) designates a type of train. In (13b), *open* is transitive, but *pressure* is not a possible object for semantic reasons, so that it is again necessary to find a different interpretation. In this case, it is an instrument that opens wine bottles by means of air pressure. The availability of alternative interpretations, as illustrated in (13), is typical of compounds. By contrast, for the Italian examples in (12) an analysis as phrasal conversion, as proposed in ten Hacken (2010) is more appropriate. Therefore, I do not consider the expressions in (12) compounds.

In Italian we find few N+N compounds. This is generally typical of Romance languages. Although Radimský (2015) discusses quite a significant number of examples, they are very rare among the translations of the Levi list. More common are constructions with the preposition *di* as in (14).

- (14) a. gruppo di lavoro 'group of work', i.e. working group
 b. torta di mele 'cake of apple', i.e. apple cake
 c. olio d'oliva 'oil of olive', i.e. olive oil

The examples in (14) illustrate how the Italian N+*di*+N construction corresponds to English N+N compounds. The Italian construction is left-headed, but its semantic behaviour, i.e. the way the meaning of the expression is determined, corresponds to that of the English right-headed N+N cases. In ten Hacken (2013), I argue for a similar analysis of French N+*de*+N. The French preposition *de* can be analysed as a periphrastic genitive, corresponding to the morphological genitive found in languages such as Polish. Extending the scope of the argument to Italian seems straightforward and I will assume that cases such as (14) are compounds.

In the Italian translations of the Levi list, about 70% belong to the RA+N or N+*di*+N constructions. Whereas in German, the proportion of translations that are not compounds is barely over 10%, in Italian it is almost 30%. Some examples of these are given in (15).

- (15) a. curry con coriandolo coriander curry
 b. aspirapolvere vacuum cleaner
 c. carillon music box

In (15), the Italian expressions are followed by the compounds of the Levi list they translate. (15a) is a paraphrase, literally 'curry with coriander'. As argued in ten Hacken (2013: 106–108), prepositions generally determine the relationship between the nouns they connect much more precisely than periphrastic genitives as in (14). Therefore cases such as (15a) should not be considered compounds. (15b) is a case of the type we encountered in (12), which I analyse as phrasal conversion. (15c) is a simplex noun.

Among the translations as compounds, there is no huge gap between the frequency of RA+N and N+*di*+N. The former account for 39%, the latter for 32% of translations. There are no semantic classes that fall entirely in one or the other, but there are still some preferences we can observe. For FROM, no RA+N translations were used and almost all are N+*di*+N, as in (14c). Some relations in which RA+N translations account for a clear majority are illustrated in (16).

- (16) a. rivista sportiva sports magazine ABOUT
 b. gocce nasali nose drops FOR
 c. problemi familiari family problems IN

As in (8) for German, (16) gives the Italian expression followed by the item from Levi's list and the RDP. As the Italian construction is left-headed, the N precedes the RA and the translation reverses the elements compared to the English original.

Our interest in the Italian data is of course triggered by the hypothesis in (6). In order to test this hypothesis, Table 2 brings together the relevant figures in the same way as Table 1 did for German.

Table 2: Translation of English N+N and RA+N compounds into Italian

Italian	N+ <i>di</i> +N	RA+N	other	total
English N+N	111 (39.9%)	64 (23.0%)	103 (37.1%)	278
English RA+N	20 (15.2%)	95 (72.0%)	17 (12.9%)	132

As in Table 1, the total number of translations is higher than 383, because in cases where two translations are equally possible, both were recorded. The most striking figures in Table 2 are in the column headed *RA+N*. They show that less than a quarter of English N+N compounds were translated as Italian RA+N combinations, but almost three quarters of English RA+N compounds were translated in this way. In some way, Italian RA+N is less attractive as a translation of English N+N. This results in a higher proportion of N+*di*+N translations, but also in a much higher proportion of other translations, cases such as (15). There were a total of 10 N+N translations, e.g. *attore bambino* ('child actor'), all of them corresponding to English N+N compounds.² As they make up less than 4% of the total, they are included in the *other* column, but their exclusive occurrence with English N+N compounds presents another case of a cross-linguistic bias.

When we consider the use of RA+N in English, German and Italian on the basis of these data, we see first of all that there is a clear hierarchy in the sense that Italian has more RA+N items than English, which in turn has more of them than German. Secondly, there seems to be a strong correlation between the use of RA+N in the three languages. When we consider English and German, almost all German RA+N correspond to English RA+N. For English and Italian, English RA+N are three times as likely to correspond to an Italian RA+N as English N+N. Clearly, this result goes against the hypothesis in (6).

4. Possible explanations for the cross-linguistic correspondence in RA+N

The hypothesis that served as a starting point is (6), repeated here for ease of reference.

- (6) In two languages which have RA+N combinations and other compounding constructions, there is no correlation between the names chosen for the same concept.

The idea behind (6) is that if RA+N combinations are compounds in the same way as N+N in English and German and N+*di*+N in Italian, the choice is independent in each language. The approximate proportions we found for the compounding types in §3 are 2:1 for English, 9:1 for German and 5:6 for Italian. Here the last figure is for the RA+N compounds and the first for N+N in English and German, N+*di*+N in Italian. What (6) predicts is that, for instance, the proportion of 9:1 for German N+N vs RA+N applies equally to translations of English N+N and of English RA+N constructions. In fact, for N+N the proportion is 56:1 and for RA+N it is 2:1. Similarly, in Italian we expected 5:6 for translations of English N+N and English RA+N, but we found 2:1 for the former and 1:5 for the latter. The evidence against (6) is so strong, that we need an explanation.

² Examples such as *attore bambino* and English *girlfriend* are sometimes considered coordinative compounds. However, the relation between the two components is not symmetrical. *Girlfriend* designates a type of friend, but not a type of girl. Similarly, *attore bambino* is a type of *attore* but not a type of *bambino*. Therefore, I consider them regular, headed compounds, not coordinative compounds.

A first possible explanation to consider is what I will call *translator's bias*. As the English list served as a basis for translation into German and Italian, there is a risk that not only the meaning, but also the structure of the source language expression is taken over in the translation. The issue of equivalence is a central point of discussion in translation theory. In Munday's (2016) catalogue of translation theories, the explicit discussion of equivalence is concentrated in the earlier chapters, covering earlier research, but its results are presupposed also in many later approaches.

A landmark in the discussion of equivalence is Nida's (1964) distinction between what he calls *formal* and *dynamic equivalence*. Nida (1964: 159) describes formal equivalence as concentrating "on the message itself, in both form and content" and dynamic equivalence as aiming for "complete naturalness of expression" while maintaining equivalent effect. In her rather practically oriented introduction to translation studies, Baker (2018) organizes much of the theory around the level at which equivalence is aimed for. She starts with equivalence at word level, moving to multi-word expressions, sentence structure and various aspects of text structure and the organization of meaning in a text.

In the context of the translations of compounds from Levi's list, we are dealing with structured words. The question is to what extent the structure of the word is considered in choosing a translation. The main translators involved were Christina Muigg, a graduate of the MA Translation Studies in Innsbruck, and Laura Rebosio, a student on that degree. As professional translators, they are aware of the different levels of equivalence and experienced in working with them. They were also encouraged to look for the degree to which an expression was established in the language standard, consulting dictionaries and (other) native speakers in cases of doubt. In these circumstances, a significant bias from the source language expression is hardly probable. Although Tosi (2001: 244–262) observes such influences in Italian translations produced at the EU, it should be noted that these are typically produced under high time pressure. Moreover, the awareness that the results will be used for linguistic research increases the urge to take a well-founded decision in the choice of construction.

Therefore, it seems safe to dismiss translator's bias as a major factor in explaining the difference between the predictions made in (6) and the actual figures found in §3. Although a certain degree of bias cannot be entirely excluded, it is certainly not sufficient to explain the degree of divergence.

A second possible explanation is what I will call *semantic bias*. The idea is that the RA+N construction has a meaning of its own. In the case of compounding, the meaning of the construction is very limited. Compounds are basically combinations of a head and a non-head in which the semantic relation between the two is unspecified by the construction. However, in ten Hacken (2013: 106–108), I discussed cases such as (17).

- (17) piosenka o miłości
'song about love_{LOC}', i.e. love song

In (17), a Polish translation of *love song*, occurring in Levi's list in the RDP ABOUT, is given. Whereas the English compound is underspecified for the relation between its components, the Polish translation in (17) has the preposition *o* ('about') making this relation explicit. When I discussed this example with other Polish speakers, they came up with different translations that highlighted other aspects of the relation between *love* and *song* in *love song*. Clearly, whatever the semantic bias, RA+N is not specific in the sense that *o* in (17) is. A better

parallel may be the French use of *à*. This is a preposition with a wide range of meanings. Collins-Robert (1987: *à*) gives 17 main senses. However, in the translation of compounds from Levi's list, it is only used in the types illustrated in (18).

- | | | | | |
|------|----|------------------|-------------|----------|
| (18) | a. | frein à main | hand brake | USE |
| | b. | boîte à musique | music box | y MAKE x |
| | c. | sauce à la crème | cream sauce | y HAVE x |

The article in (18c) is also typical of only the RDP illustrated in that example. However, the identification of such a range of relations is still not a good parallel for RA+N. The French preposition *à* does not have obvious equivalents in other languages. For an explanation of the effects in Tables 1 and 2 by semantic bias, we need not only a set of meanings associated with the construction, but this set should also be cross-linguistically stable.

When we consider the distribution of RA+N among RDPs and nominalization types, there seem to be certain trends identified in §3 which point in this direction. Thus, the RDP FROM is expressed by means of N+N in all English and German examples and by N+*di*+N in almost all Italian cases. In German, not only FROM but also FOR and MAKE are exclusively expressed by N+N compounds in our sample. This may suggest a kind of implicational hierarchy of semantic relations. Such a hierarchy would be a cline with relations typically expressed by N+N compounds on one end and relations typically expressed by RA+N combinations on the other. A language would then be assigned a particular point on the cline.

There is one major flaw with such a model, however. In English, FROM is invariably expressed by N+N, but all other relations can be either N+N or RA+N. This means that the generalization is only a tendency. Formulating a generalization as a tendency is not an explanation of the observations. The tendency is rather a result of the interaction of a number of different underlying factors. For a proper explanation, these factors should be identified.

Therefore, the role of a semantic bias in the choice of RA+N combinations in contrast to N+N or N+*di*+N is that of an observational generalization. It is not an explanation, but has a status similar to Tables 1 and 2.³

As a third option for explaining the cross-linguistic coincidence in the use of RA+N combinations as a compounding construction, I propose to turn to the naming process producing new words. In most cases, new words are formed in order to name new concepts. Here *concept* refers to any meaning that may be named. This implies that function words are not necessarily names for concepts, but lexical words generally are. *New* has to be understood in relation to a speaker. Meanings of words are not represented in performance (as is well-known in the case of corpora), but only in a speaker's competence. When a speaker has no lexical entry for a concept they want to mention, they can either use a descriptive phrase or come up with a new name. It is at this point that the choice between RA+N and N+N plays a role.

In the same way as performance, also naming is the outcome of the complex interaction of many factors. While corpus-based studies can come up with interesting

³ Marchis Moreno (2018) observes a correlation between the choice of construction and the argument structure realization in Spanish. He gives both *pesca de ballenas* and *pesca ballenera* as possible translations of *whale fishing*, but the former has an event reading and the latter a result reading (2018: 153). This leads to different syntactic possibilities (2018: 113). This observation only applies to a highly restricted subset of the cases investigated here and assessing its applicability to German, English and Italian requires a different methodology than the one based on the translation of compounds. I will leave this for further research.

quantitative generalizations about performance, the explanation of such phenomena requires the identification of underlying factors. In the case of performance, a crucial underlying factor is the speaker's competence. However, whereas competence is individual, because it is realized in a speaker's brain, performance has in general a social, communicative aspect to it. Speakers choose from their linguistic repertoire to come up with utterances or texts reflecting their intentions and their assessment of the situation. Here *situation* includes the knowledge and expectations of the hearer(s) or the readership.

In the case of naming, the role of competence is taken, at least in part, by the word formation system. Of course, word formation is not the only naming mechanism. It competes and interacts with sense extension and borrowing. However, of these mechanisms only word formation can be described by rules. It is on the basis of such considerations that Štekauer (2009) studies context-free compound formation. The aim of such a study is to identify the rules that are used in interaction with other factors to come up with compounds.

Let us now consider how this perspective can be used to account for the remarkable cross-linguistic coincidence in the use of RA+N as a compound form. For the sake of brevity, I will speak about N+N as the alternative, assuming that it is realized as N+*di*+N in Italian. It is unlikely that there are conditions inherent in the rules that determine the choice between RA+N and N+N. If there were, we would observe a much more clear-cut division. I see three good candidates for factors influencing the choice.

First, naming takes place in a context of social interaction. Even if the new name is first written, the author will have the readership of the text in mind. Of course, different authors or speakers have different degrees of communicative talent, but there is at least an unconscious tendency to search for common ground. This tendency is first of all reflected in the choice of language, but also in the register and the background knowledge that is assumed. At this level, the choice between RA+N and N+N is influenced by language-specific preferences. English, German, and Italian are not empirical entities, so that it is not possible to measure the relative importance of RA+N and N+N objectively, but speakers belonging to a speech community will be exposed to RA+N and N+N to different degrees, which determines to what extent one or the other of the constructions is marked. This type of markedness can be studied on the basis of corpora.

A second factor influencing the choice of a name is the position a particular name assigns to the lexical unit in the lexicon. By *lexicon* I refer here to the mental lexicon of an individual speaker. Of course, within a speech community, mental lexicons of different speakers have a good deal of similarity. Otherwise, they would not belong to the same speech community. Lexical entries are connected to each other on the basis of different criteria. They include what Saussure (1916: 170–175) calls *rapport associatifs*, i.e. paradigmatic relations. For any new word, they include formal and semantic similarities to existing entries. These factors influence the choice of a name for a new concept. For a new compound, in particular the relation to other compounds with the same head, other compounds with the same non-head and other compounds with the same relation between the head and the non-head are relevant. The choice of RA+N or N+N in a particular case influences the position in the network because it strengthens the relationships with some other words while increasing the distance to others.

If these two factors were the only ones, it might be possible to predict whether a particular new concept would be more likely to have an N+N or an RA+N name, but there would be no reason to expect any cross-linguistic similarity in such decisions. In order to explain cross-linguistic tendencies, we must assume cross-linguistic influence. It is well

known that most people worldwide are not monolingual. Moreover, it can be expected that being in contact with speakers of other languages tends to increase the chance of coming across new concepts that need naming. In many cases, such concepts will have a name in another language that is known to the speaker naming it in the language they speak at that point. Borrowing is an obvious naming procedure in such circumstances. However, the name in the other language may also influence the choice of a name in more subtle ways. An example of this type of influence is (19).

(19)	a.	gorsaf drenau	train station	Bahnhof
	b.	gorsaf pŵer	power station	Kraftwerk
	c.	gorsaf heddlu	police station	Polizeirevier

In (19), three compounds in Welsh are given with their English and German equivalents. Welsh compounds are left-headed. The use of *gorsaf* as an equivalent to English *station* in all three cases seems straightforward from an English perspective. However, when we consider the German equivalents, it is much less obvious why this should be so. All of the German equivalents are compounds as well, but they have different heads. *Hof* means ‘yard’, *Werk* means ‘plant, factory’ and *Revier* means ‘territory’. The use of *gorsaf* in all three examples in (19) is not surprising, because all speakers of Welsh also know English.

The influence of other languages in the choice between RA+N and N+N is not restricted to borrowing and does not have to be as direct as in (19) for all individual cases. As soon as some compounds are available in the mental lexicon of a speaker, they will influence the sense in which an RA+N or N+N name for a related concept sounds natural. That is to say, the third factor can feed into the second factor. The social interaction in the first factor listed above means that as soon as there is one speaker in a community who has such an influence from another language in their mental lexicon, they can influence other speakers even independently of their knowledge of other languages.

5. Conclusion

I started this paper with the observation that there are two different views on the position of relational adjectives (RAs) with respect to morphology and syntax. In one view, RA+N combinations are compounds (i.e. morphological constructs), in the other, they are phrases (i.e. syntactic constructs). If we adopt a definition of compounding of the type I argued for in ten Hacken (1994, 2013), which is based on semantic and high-level syntactic properties (e.g. island effects in pronominal reference) rather than on phonological and low-level syntactic properties (e.g. agreement), RA+N combinations are compounds. A plausible hypothesis based on such a classification is that the choice between different compounding constructions is cross-linguistically random. This means that in each language the choice is made independently.

On the basis of an analysis of the translations of Levi’s (1978) list of 383 compounds into German and Italian, I showed that this hypothesis, though plausible, is not confirmed by the data. However, I argued that there is no reason to assume that the observed tendency for RA+N combinations to be used for the same concepts cross-linguistically is based on a translator’s bias or on a cross-linguistically specified range of meanings assigned to the RA+N construction. Instead, I showed that the observed bias can be explained by an appeal

to the nature of the naming process. In the choice of a name, speakers take into account the mental lexicon they already have. Multilingual speakers will also be influenced by the lexicon of the other languages they have. As multilingual speakers are often the first in a speech community to be in contact with new concepts, they have an advantage as namers in the speech community. When some RA+N names are chosen in this way, language-internal mechanisms continue their influence on the names for related concepts.

Therefore, the hypothesis of randomness is false, but this does not show that the analysis of RA+N combinations as compounds is false. Rather it suggests interesting perspectives on naming in a speech community.

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