LUTZ GUNKEL
GISELA ZIFONUN

Constraints on relational-adjective noun constructions: A comparative view on English, German and French

Abstract: In English and French relational adjectives occurring in construction with deverbal nominalizations can be thematically associated with subject as well as object arguments. By contrast, in German object-related readings of relational adjectives seem to be inadmissible. The greater flexibility of English and French in terms of the thematic interpretability of relational adjectives also shows up with respect to 'circumstantial' thematic roles like directionals, locatives and instrumentals. It is arguably due to the common Latin heritage of English and French, since in Latin relational adjectives representing subject or object arguments of nominalizations are widely attested. However, even in English and French object-related readings are confined to result nominalizations, a restriction we suggest to account for in terms of the more 'noun-like' character of result nominalizations in contrast to process nominalizations. Moreover, since argument-related interpretations of relational adjectives can always be overridden by appropriate agentive/patientive phrases, relational adjectives cannot be analyzed as *occupying* an argument position, but rather as modifying the semantic role associated with it.[1]

1. Introduction

In many European languages of different genetic background two types of adjective can be found: 'qualitative' adjectives such as those in *green spot* or *humble character* and 'relational' adjectives[2] like the ones in *departmental issue* or *medical school*.

A qualitative adjective is commonly characterized as one that attributes a property to the denotation of its head noun, whereas a relational adjective is one that is said to classify that denotation by relating it to a certain type of entity. For example, one can fairly say that a green spot is a spot that has the property of being green, but one would not define a departmental meeting as one that is 'departmental'. Rather, one would say that a departmental meeting is a meeting of a certain kind, viz. the kind of meeting that in one way or other concerns the department. Relational adjectives, then, classify an entity by relating it to whatever

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[1]   We are grateful to the editors for numerous helpful comments concerning content and style.
[2]   The term was introduced by Bally (1932/1965, 97) with respect to French ('l'adjectif dit «de relation»') and subsequently taken up by other scholars; cf. Dornseiff (1964), among others.

they themselves refer to, with the denotation of the overall construction always being a subset of that of the head noun. Being most often derived from common nouns or – to a minor degree – from proper names, their denotation appears to be of the same semantic type as that of their respective base nouns. This is also reflected in some salient syntactic characteristics of relational adjectives. For example, just like nouns, relational adjectives can neither be modified by adverbs (*a very judicial decision, *a very court decision*), nor can they be used predicatively (*the decision was judicial, *the decision was court*).

The semantic closeness of relational adjectives to nouns is also shown by the fact that in English the semantic relation of a relational adjective to its head noun seems to be the same as that of a noun modifier to its head noun (*a government decision, *a very government decision, *the decision was very government*). Moreover, relational adjectives in construction with nouns compete semantically with N-N compounds in languages that have this type of compound (*linguistic difficulties* vs. *language difficulties*).

It should be noted that adjectives may often be ambiguous between a relational and a qualitative meaning. In English, the most famous example is probably *criminal lawyer*, meaning 'lawyer specialized to criminal cases' ('defense lawyer') in its relational reading and 'lawyer who is criminal' in its qualitative one.

Given the noun-like character of relational adjectives (in terms of their semantics), one may ask whether they may enter into thematic relations to deverbal nominalizations. For example, in (1) we find nominalizations based on the verbs *to meet* and *to pollute*, where an *of*-phrase realizes either the subject (in the case of *meeting*) or the object argument (in the case of *pollution*). As can be seen from (2), semantically (almost) equivalent constructions are possible where the thematic roles of agent or patient appear to be realized by a relational adjective.

(1)   *the meeting of the department, the pollution of the environment*
(2)   *the departmental meeting, the environmental pollution*

In what follows, we will pursue the question to what extent relational adjectives can be interpreted thematically with respect to deverbal nominalizations as illustrated in (2). To this end, we will present comparative data from English, German and French. The focus of interest will be the question of the constraints imposed on such constructions. As will be shown, both English and French appear to be more flexible than German with respect to the realization of thematic roles by relational adjectives. This holds for 'core' thematic relations like agent/experiencer and patient/theme as well as for 'circumstantial' ones such as directionals, locatives and instrumentals.

The paper is organized as follows. Section 2 gives a brief survey of relational adjectives in the languages under investigation. In Section 3, relational-adjective noun construction will be examined, involving nouns derived from different types of verbs. A summary and some attempts at an explanation are found in Section 4.

2. Relational adjectives in English, German and French – an overview

2.1 English

In English, relational adjectives are predominantly formed with non-native suffixes, mostly of Latin origin. These include, among others, *-al* (*criminal*), *-an* (*urban*), *-ary* (*visionary*), *-ic* (*atomic*), *-ine* (*canine*). Among these suffixes, *-al* and *-ic* are most frequent, with *-ic* being the most productive suffix of this type in general (cf. Leitzke 1989, 17). Allomorphic variants exist for *-al* (*-ial, -ual, -ar*), *-ic* (*-atic, -ific, -ical, -istic*; cf. Huddleston / Pullum 2002, 1707-12) and *-an* (*-ane, -ean, -ian*) (Leitzke 1989, 17).[3] In general, these suffixes are also used to derive qualitative adjectives. They almost exclusively[4] combine with non-native bases inherited or borrowed – sometimes via French – from Latin and Greek (Leitzke 1989, 35). These are often bound stems that in some cases "[…] correspond semantically to morphologically unrelated English-based nouns" (Huddleston / Pullum 2002, 1708), as is illustrated in (3).[5] (4) shows in addition that such stems are sometimes even morphologically unrelated to corresponding nouns of foreign origin.

(3) *oral – mouth, cardiac – heart, canine – dog, verbal – word, filial – child, paternal – father, maternal – mother, royal – king / queen, lunar – moon, annual – year, corporal – body*

(4) *clerical – office, nuclear – atom (nucleus), urban – city, fiscal – tax*

Conversely, the two relevant native suffixes, *-ish* (*doggish*) and *-ly* (*bodily*), are restricted to native bases (cf. Leitzke 1989, 16-7). Both are found, in particular, with qualitative adjectives. When forming relational adjectives, *-ish* mainly derives "[…] adjectives relating to countries or ethnic groups […]" (Huddleston / Pullum 2002, 1693).

Relational adjective-noun constructions in English semantically compete with N-N compounds and possessive constructions in expressing the same type of classificatory meaning. Some examples of (near) synonymous pairs of adjective-noun constructions and compounds are given in (5).

(5) *language difficulties – linguistic difficulties, industry output – industrial output, drama criticism – dramatic criticism, ocean winds – oceanic winds, atom bomb – atomic bomb* (Levi 1978, 4)

Possessive constructions express a meaning similar to that of relational adjective-noun constructions if the *of*-phrase is interpreted generically:

(6) *output of the industry – industrial output, winds of the ocean – oceanic wind*

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[3] Not surprisingly, the exact extension of each allomorphic set is a matter of debate. Thus, for instance, Leitzke (1989, 17) considers *-ical* a variant of *-ic* – in fact the only variant of this suffix.

[4] The notable exception is *-al* as in *tidal* (cf. Marchand 1969, 238).

[5] The same observation holds for French; see below.

2.2   German

German, like English, has two sets of affixes for deriving relational adjectives: a native and a Latin-based one. In contrast to English, relational adjectives formed with the two native affixes *-isch* and *-lich* (etymologically corresponding to English *-ish* and *-ly* respectively) are frequent and still productive. Their distribution is determined by several factors. For instance, non-native bases only license *-isch* as in *linguistisch* ('linguistic') and *elektrisch* ('electrical'). An important factor is animacy: Under suitable phonological conditions animate bases favour *-isch* as in *tierisch* ('animal'), *hündisch* ('canine'), *kaufmännisch* ('mercantile') and *verlegerisch* ('publisher-related'). Derivations from topological terms like *badisch* ('from/of Baden'), *russisch* ('Russian') and *amerikanisch* ('American') can be added to this list. Interestingly, with the core part of nouns having a human/personal denotation, especially within the kinship terms, *-lich* is preferred: *kindlich* ('filial'), *väterlich* ('paternal'), *mütterlich* ('maternal'), *elterlich* ('parental'). Within this domain the two affixes can also mark the semantic opposition between qualitative (*-isch*) and relational (*-lich*) uses of adjectives: *kindisch – kindlich* ('childish' – 'filial'), *weibisch – weiblich* ('effeminate' – 'feminine'). Native inanimate bases almost exclusively combine with *-lich* for deriving relational adjectives: *staatlich* ('state-related'), *häuslich* ('domestic'), *baulich* ('structural'). Exceptions are *städtisch* ('urban') and *schulisch* ('school-related').

As for the Latin-based affixes there is a large overlap with English and the Romance languages: *-al/-ell* as in *kriminal/kriminell* ('criminal'), *-ar/-är* as in *nuklear* ('nuclear'), *revolutionär* ('revolutionary') and *-an* as in *human* ('human'), *urban* ('urban') represent the most frequent types. There is one important feature that is unique to German (among the languages under comparison): Latin-based relational adjectives can either combine syntagmatically (as inflected attributes), for instance as in *globale Lösung* ('global solution'), *nuklearer Schlag* ('nuclear stroke'); or they can combine lexically as the non-head of a compound: *Globallösung* ('global solution'), *Nuklearschlag* ('nuclear stroke'). In English this distinction is neutralized, since adjectives do not inflect in attributive function. Combinations like *criminal case* and *criminal gang* both count as syntactic adjective-noun constructions (possibly denoting only one unified concept), whereas the German equivalents *Kriminalfall* and *kriminelle Bande* disambiguate the two readings of the adjective on the morphological and on the syntagmatic level. Relational adjectives with native affixes cannot participate in compounding: **Brüderlichliebe* vs. *Bruderliebe* ('fraternal love').

The example in (7) shows that adjectival attribution and compounding may have similar semantic effects in German:

(7)   *königlicher Palast – Königspalast* ('royal palace')

In contrast to English, compounding is preferred over relational adjective-noun constructions whenever possible, at least in the colloquial language:

(8) *Arztpraxis – medical practice, Arztberuf – medical profession, Kernwaffen / Atomwaffen – nuclear weapons*[6]

2.3 French

In French the nominal bases of relational adjectives are almost exclusively of Graeco-Latin origin. There are three different cases:

a) The base of the relational adjective is a French noun which, in most cases, goes back to a Latin word as in *routier* ('road-related') < *route* ('road'), *royal* ('royal') < *roi* ('king'), *touristique* ('tourist-related') < *touriste* ('tourist').

b) The base is a Latin or Greek noun as in *scolaire* ('school-related') < Latin *schola* ('school'), *infantile* ('filial') < Latin *infans* ('child'), *cardiaque* ('cardiac') < Greek *kardia* ('heart'). The noun itself is preserved in French, but may have undergone a phonological development leading to differing forms as in *école* ('school') < *schola*, *enfant* ('child') < *infans*. French *cœur* ('heart') goes back to Latin *cor*, etymologically related to Greek *kardia*. For pairs like *scolaire – école* there is a phonological similarity and perhaps an associative link between the elements, but no direct derivational connection. In some cases two versions of adjectives coexist, a native one and a neo-classic one, where the latter always has a clearly relational use, while the former may develop qualitative meanings of different types:

(9) *scolaire* < Latin *schola* ('school') – *écolier* < French *école* ('school')
(10) *legal* < Latin *lex* ('law') – *loyal* < French *loi* ('law')
(11) *infantile* < Latin *infans* ('child') – *enfantin* < French *enfant* ('child')

c) The base is a Latin or Greek noun which does not have the status of a lexical entity in French, but occurs as a bound stem only.

(12) *urbain* < Latin *urbs* ('town'), also in: *urbanisation* ('urbanization'), *urbaniste* ('city planner'), *urbanité* ('urbanity')
(13) *rural* < Latin *rus* ('countryside')

In this case there is no associative link to a French noun. The link to a Latin (or Greek) noun is only manifest to educated people.

'Relatinization' of the French lexicon, starting at the end of the Middle Ages, is especially distinctive for the formation of relational adjectives on the model of types b) and c), so that these two types together outnumber those of type a) by far (cf. Wandruszka 1972, 16).

As is well known, nominal compounding in the sense of an asyndetic combination of a head noun with a nominal modifier to its right (N-N construction) is a rather peripheral phenomenon in French. Examples like *appareil photo* ('camera') and *vignette auto* ('road tax disc') occur in the print media and their use is increasing; but at least for the late seventies, Rohrer (1977, 112) pointed out that

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[6] In more elaborate style there is often free variation between the compound and a relational adjective-noun construction, cf. *Atomwaffen/nukleare Waffen/Nuklearwaffen* ('nuclear weapons').

this structure had not yet affected the core domains of the language.[7] So, bound attributes are chiefly represented by 'bound prepositional phrases' (sometimes called 'prepositional compounds', cf. Thiele 1981, 91; Bollée 2002, 83), mainly with the prepositions *de* and *à* as in (14) and (15).

(14) *le medecin de famille* ('the family doctor'), *la soirée d'automne* ('the autumn evening')

(15) *le couteau à fromage* ('the cheese knife'), *le moteur à essence* ('the gasoline engine')

In bound prepositional phrases there is no internal article. This demonstrates the defective syntactic status of the prepositional phrase and its semantic non-referentiality. Though in many cases an internal article is necessary, the conditioning factors are not fully understood. This sort of construction containing an internal definite article is neither to be considered as 'bound attribution', nor as classificatory modification, even if a unified concept is denoted, as in (16):

(16) *la police de *(la) route* ('the highway police'), *la maison *de / du père* ('the paternal home')

We regard constructions like the well-formed ones in (16) as possessive constructions where the attribute has a generic referential reading.

    As for the choice between relational adjective-noun constructions and the alternatives just mentioned, again, only adjectival and bound prepositional attributes are real competitors (cf. [7], [8] for German), the generic possessive construction being of a different semantic type. Interestingly enough, there are also considerable gaps on both sides, though there is substantial overlap between both types:

(17) *le medecin familial – le medecin de famille* ('the family doctor'), *le manuel scolaire – le manuel d'école* ('the school textbook')

(18) *la langue maternelle – *la langue de mère* ('the mother tongue'), *la politique gouvernementale – *la politique de gouvernement* ('the governmental politics')

(19) *le film d'aventure – Ø* (no corresponding relational adjective) ('the adventure movie')

It should be emphasized, however, that relational adjective-noun constructions are highly productive and still expanding, even in the everyday language (cf. Wandruszka 1972, 25). In contrast to German they are in general not outranked by competing 'bound constructions', i.e. the two patterns are more or less balanced in terms of productivity.

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[7]   The exocentric type of nominal compounding, in contrast, as in *allume-cigarre* ('cigar lighter'), *ouvre-lettre* ('letter opener'), where a verbal stem (or an imperative form) is followed by a noun filling the object slot of the verb, is very productive in the colloquial language, cf. Rohrer (1977, 138). These nouns usually denote concrete objects (persons, instruments) and do not compete with relational adjective-noun constructions. Therefore, they are neglected here.

3.   Relational adjectives in construction with deverbal nouns

3.1   Types of nominalizations

Deverbal nominalizations can be roughly divided into three types, according to the semantic type of their denotation. First, there are nominals referring to actions or processes (*nomina actionis*, cf. [20]). Second, we have those denoting a state or object resulting from some action or process (*nomina acti*, cf. [21]). The third type comprises deverbal nouns designating the agent of some action or process (*nomina agentis*, cf. [22]). In what follows, we will also refer to these as 'process', 'result' and 'agent nominals' (or nominalizations), respectively.

(20) *The pollution of our waters by the local industries has to be stopped.*
(21) *The pollution of our waters is severe.*
(22) *Any pollutor of our waters must be punished.*

Process nominals are sometimes difficult to distinguish from result nominals. The main reason for this is that nominalizations of telic verbs regularly have both readings, provided they are not lexicalized. In English, for instance, (non-lexicalized) derivations in *-(a)tion* based on telic verbs are systematically ambiguous in this way (cf. [20] vs. [21]), and the same applies to their counterparts in other languages (*-ion*, *-ung*). For matters of convenience we will often use the term 'event nominalization' (or 'event nominal') to refer to both process and result nominals.

3.2   English

In English, event nominalizations are mainly derived by *-ing*, forming the nominal gerund (*running*, *developing*, *reading*), and *-ation* (*circulation*) with *-ion*, *-ition*, *-sion*, *-tion* and *-ution* as allomorphic variants. Both *-ing* and *-ation* are productive in Present-Day English, in contrast to a couple of other suffixes such as *-ance* (*performance*, variant: *-ence*), *-ure* (*departure*) and *-ment* (*improvement*), which, according to Huddleston and Pullum (2002, 1703), is "[…] now only marginally productive, if indeed productive at all." Another suffix to be mentioned is *-al* (*arrival*), whose productivity is likewise questionable (cf. Huddleston / Pullum 2002, 1700). Agent nominals are formed with *-er*, with the variants *-or* and *-ar*, as in *dweller*, *instructor* and *liar*.

Nominalizations derived from intransitive verbs

In combination with event nominals based on intransitive verbs, relational adjectives can take on a subject-related reading, being thematically interpreted either as the agent/experiencer (cf. [23]) or the theme/patient of the underlying verb (cf. [24]).

(23) *judicial acting / action, canine barking, human thinking / dreaming, American / maternal interference / interfering, female participation, departmental / plenary meeting*

(24) *atmospheric circulation, volcanic eruption, judicial failing, cellular division, thermal / urban expansion, urban regeneration, economic / industrial / linguistic / occupational / organizational / personnel / professional / regional / rural / urban development*

Note that some forms are ambiguous between noun and adjective, cf. (25). This holds regularly true of so-called ethnic adjectives, cf. (26). What prevents examples like *human thinking* from being analyzed as N-N compounds is the fact that in synthetic compounds[8] subject-related readings are permitted only if the subject argument is not an agent (or 'external argument', cf. Fabb 1998, 68), cf. (27). Thus, compounds based on agentive intransitive verbs like the ones in (28) are either ruled out as ungrammatical, or at least cannot be interpreted with the non-head as subject argument. Instead, a non-referential, descriptive *s*-genitive must be used in English, cf. (29). Interestingly, but not surprisingly, when in construction with an N-N compound relational adjectives may realize their subject argument and the non-head N the object argument of the deverbal base, cf. (30).

(25) *human, female, male, public, canine, feline, equine, bovine, animal, domestic*
(26) *American, German, Polish, Italian*, etc.
(27) *cell division, language development, volcano eruption*
(28) **man thinking, *women participation*
(29) *man's thinking, women's participation*
(30) *industrial water pollution*

Furthermore, it should be noted that a subject-related reading of the adjective can almost always be overridden by adding an appropriate *of*-phrase, as illustrated in (31). In these cases, the semantic contribution of the adjectives no longer consists in providing a thematic argument for the deverbal noun. Rather, the relational adjective denotes an aspect of the denotation of the *of*-phrase with regard to which the process denoted by the noun is to be interpreted. For instance, *rural development of Java* means the development of Java's rural area, in contrast to, say, the development of its urban settlements.

(31) *urban expansion of Athens, rural development of Java, volcanic eruption of Pinatubo, urban regeneration of the Lower Lea Valley, cellular division of the coelomic epithelia*

Turning to agent nominals, attribution by relational adjectives is possible, but in order to invoke a reading that comes close to a subject-related reading of the adjective, both the adjective and the noun must be interpreted as coreferential, cf. (32).

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[8]   Recall that synthetic compounds are ususally defined as consisting of an adjectival or nominal (deverbal) head and a nominal non-head filling an argument position of the head, cf. Fabb (1998: 68), among others.

However, it seems more plausible to interpret the adjective in examples like (32) in the same way as in (31), i.e. as providing an aspect or a role of the head noun.

(32) *human thinker / dreamer, male / female worker*

Nominalizations derived from transitive verbs

With event nominals derived from transitive verbs, a relational adjective may likewise be interpreted as the subject argument, cf. (33).

(33) *domestic/human/public consumption, domestic production, parental/maternal/ paternal/fraternal protection, judicial execution/interrogation, congressional opposition, political provocation, editorial/governmental supervision, medical examination, industrial pollution, corporate planning*

As with intransitive verbs, a subject-related interpretation of the adjective can be shifted to a purely classificatory one when an appropriate agentive phrase is added, cf. (34) and (35).

(34) *governmental supervision by the states, corporate planning by corporations*
(35) *the Norman invasion of England by William the Conqueror*

In contrast to German, but in accordance with French, English also permits relational adjectives to be associated with the object argument of a nominalization, cf. (36). Such constructions are largely restricted to denoting result states or result objects.

(36) *colonial administration/liberation/suppression, chemical consumption, racial discrimination, presidential/gubernatorial election, floral exposition, agricultural/economic/educational/environmental/financial/fiscal/industrial/regional/ urban planning, environmental pollution/protection, dramatic/electric production, corporal punishment, urban renovation, colonial ruling, cardiac transplantation, dramatic/lyric writing*

Again, a thematic reading can be blocked by an *of*-phrase, cf. (37).

(37) *colonial administration of India, racial discrimination of black people, urban renovation of three cities.*

As has often been noticed in the pertinent literature (Kayne 1981; Grimshaw 1990, 88; Giorgi / Longobardi 1991, 125), ethnic adjectives are barred from being thematically related to the object position when the subject argument is realized at the same time. This is shown in the contrast between (38) and (39).

(38) *Polish invasion remembered.*[9]
(39) **the Polish invasion by the Germans*

Constructions with object-related relational adjectives compete with synthetic compounds in English, since in synthetic compounds the non-head constituent

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9   URL: http://news.bbc.co.uk/1/hi/world/europe/435383.stm.

usually figures as the patient or theme argument of the deverbal head. Thus, synonymous pairs of synthetic compounds and relational adjective-noun constructions are not hard to find, cf. (40).

(40) *bovine/canine/equine/feline breeding* vs. *cattle/dog/horse/cat breeding, floral exposition* vs. *flower exposition, dramatic writing* vs. *drama writing*

Not surprisingly, agent nominals in construction with object-related relational adjectives are possible as well, cf. (41). Constructions of this type are likely to be derived as a whole from the corresponding construction involving an event nominal (e.g. *urban planning → urban planner*, by replacement of *-ing* with *-er*, etc.).

(41) *urban planner, colonial ruler, symphonic composer, dramatic/lyrical writer, racial discriminator, canine/equine breeder*

Moreover, relational adjectives may also be associated with thematic roles other than agents/experiencers or patients/themes. These are, above all, directionals (*polar expedition, lunar traveller*), locatives (*Italian travelling, coastal walker*) and instrumentals (*aural comprehension, manual worker*), which occur in combination with both event and agent nominalizations.

Summing up, in English relational adjectives are found to relate to subject and object argument positions. Besides, they may also function as locatives, directionals and instrumentals. Constructions involving object-related adjectives semantically compete with N-N compounds.[10]

3.3 German

Nominalizations derived from intransitive verbs

In German, relational adjectives can be combined with nominalizations of intransitive verbs, notably nominalized infinitives, less frequently *ung*-nominalizations, where the base can either be an agentive (cf. [42], [43]) or a non-agentive verb (cf. [44], [45]). Both types can be realized as *haben*-verbs (cf. [42], [44]) or as *sein*-verbs (cf. [43], [45]). Non-agentive *sein* verbs are usually called 'ergative' or 'unaccusative'.

(42) *ärztliches Handeln/Streben* ('medical action / a doctor's striving'), *polizeiliches Durchgreifen* ('action-taking by the police'), *väterliche Drohung* ('paternal threat'), *staatliche Einmischung* ('governmental intervention'), *weibliche Beteiligung* ('female participation')
(43) *polizeiliches Einschreiten/Tätigwerden* ('intervention/action by the police')
(44) *richterliches Versagen* ('judicial failure'), *körperliches Zucken* ('bodily convulsion'), *solare Strahlung* ('solar radiation'), *ökonomische/wirtschaftliche Entwicklung* ('economic development')
(45) *amerikanisches Scheitern* ('American failure'), *männliches Überlegensein* ('male supremacy')

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10   To a certain degree this also holds for constructions involving directionals, locatives and instrumentals, but for reasons of space we cannot go into this in any detail.

A special case belonging semantically to the group (42) or (44) are nominalizations of lexically reflexive verbs like *sich einmischen* ('to intervene'), *sich beteiligen* ('to participate'), *sich entwickeln* ('to develop'). In all these cases the adjective can be associated with the subject argument of the underlying verb and, in consequence, with the thematic role of agent in (42) and (43) or of patient/theme in (44) and (45).

Note that there are also cases that are ambiguous between argument and non-argument readings, cf. (46).

(46) *betriebliches Vorgehen* ('proceedings of the company' vs. 'proceedings with respect to the company')

Agent nominals, which are mainly derived by *-er*, with non-native bases also by *-ant*, *-or* or *-eur*, are possible but infrequent with agentive intransitive verbs (e.g. *Arbeiter* 'worker', *Helfer* 'helper', *Demonstrant* 'demonstrator', *Agitator* 'agitator', *Provocateur* 'troublemaker') and ungrammatical with unaccusative verbs (cf. *Scheiterer 'someone failing', *Unterlieger 'someone being defeated'). They should not allow relational adjectives with a subject-related (agentive) reading. The subject/ agent slot is reserved for the referential argument; for instance, *Helfer* denotes the set of people who, at a certain moment or habitually, help someone else. Thus, possible combinations like (47) must be interpreted without recourse to the thematic role of agent for *ärztlich* ('medical') / *polizeilich* ('police-related'). Rather, the adjective provides an aspect or role of the person(s) denoted by the head noun.

(47) *ärztlicher/polizeilicher Helfer* ('medical assistant', 'assistant to the police')

If we look at the alternative compounding construction, the following picture emerges: In synthetic compounds based on intransitive verbs, only patient/theme arguments can be realized by the non-head constituent. In other words, only the subject argument of non-agentive intransitive verbs can be realized as the non-head constituent. So along with (44) and (45) we may have (48) – where we sometimes replace a Graeco-Latin base with a native one – but compounds analogous to (42) and (43) are excluded, cf. (49).

(48) *Sonnenstrahlung* ('solar radiation'), *Körperzuckung* ('bodily convulsion'), *Wirtschaftsentwicklung* ('economic development')
(49) *Arzthandeln (lit. 'doctor acting'), *Vaterdrohung (lit. 'father threatening')

Nominalizations derived from transitive verbs

In construction with nominalizations of transitive verbs relational adjectives are also easily associated with the subject/agent role. This is most evident when the patient/theme argument is realized in addition, be it as a possessive genitive (cf. [50]) or as the non-head of a synthetic compound (cf. [51]).

(50) *töchterliche Wiederholung mütterlicher Verhaltensmuster* ('repetition of behavior patterns of the mother by the daughter'), *polizeiliche Absperrung des Platzes* ('barring of the square by the police'), *polizeiliche Durchsuchung der Wohnung* ('searching of the apartment by the police'), *ärztliche Ein-*

schätzung des Täters ('assessment of the culprit by a physician'), *städtische Reinigung der Straßen* ('urban cleaning of the streets')

(51) *kaiserliche Stadtgründung* ('city founding by the emperor'), *bäuerliche Getreideproduktion* ('grain production by farmers'), *ärztliche Täterein-schätzung* ('assessment of the culprit by a physician'), *städtische Straßenreini-gung* ('urban street cleaning')

Object-related interpretations, on the other hand, are regularly excluded: *ärztliche Einschätzung* cannot be interpreted as 'someone's assessment of a physician', *städtische Reinigung* can hardly be read as 'someone's cleaning of the city'. Even if we try to force an object-related reading by adding an agentive *durch*-phrase, the result will not be acceptable with the intended reading:

(52) *die ärztliche Einschätzung durch das Pflegepersonal*
$^{\$}$'the nursing staff's assessment of the physician'[11]
(53) *die städtische Reinigung durch die Müllabfuhr*
$^{\$}$'the city cleaning by the cleansing services'

As the examples in (51) show, it is the non-head constituent of nominalizations of transitive verbs that usually realizes the object argument, not a relational adjective. Since for these non-head constituents a subject-related reading is not available (in general), we get oppositions like the ones in (54).

(54) *elterliche* (agent/*patient) *Kinderbetreuung* (*Kinder-* patient/*agent) ('parental child care') – *kindliche* (agent/*patient) *Elternbetreuung* (*Eltern-* patient/*agent) ('filial parent care')

As a first generalization, one might thus say that in German relational adjectives and non-head constituents of compounds, in construction with nominalizations of transitive verbs, are in complementary distribution with respect to their thematic roles; in construction with nominalizations of intransitive verbs, relational adjectives may fill the gap left behind by the lacking agent slot in a compound.[12]

Examples like (55) seem to contradict our generalization: the relational adjectives can receive an interpretation as object arguments. However, apart from a few collocations like *körperliche Züchtigung/Ertüchtigung* ('corporal punishment', 'physical training'), this seems to be restricted to adjectives derived from a Graeco-Latin base which are usually confined to a specialized scientific terminology. It can be assumed that they follow the Latin pattern (cf. Section 4) or are directly copied from an English or French model. In colloquial language we should expect (56) (and [57]) instead of (55).

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[11] '$' indicates that the reading given by the translation is not available.
[12] There may occasionally be compounds like *Expertennennung*, *-duldung* (lit. 'mentioning/ toleration by experts') etc. (Eisenberg 2004, 231), where the non-head may get an agent reading, if not combined with a possessive: *die Expertennennung des Problems* ('the mentioning of the problem by experts').

(55) *kardiale Transplantation* ('cardiac transplantation'), *dentale Pflege* ('dental care'), *mentales Training* ('mental training')

(56) *Herztransplantation* ('cardiac transplantation'), *Zahnpflege* ('dental care')

Note that those Graeco-Latin adjectives which pertain to a higher register in German, also occur as the first part of a deverbal compound (cf. [57]), in which case they appear to function as an object argument of the base verb.

(57) *Dentalpflege* ('dental care'), *Genitalverstümmelung* ('genital mutilation'), *Mentaltraining* ('mental training')

However, in contrast to English, object-related readings are completely ruled out with agent nominals. There is no corresponding pattern for deriving agent nominals as a whole from event nominalizations, cf. (58).

(58) **kardialer Transplanteur* ('s.o. performing cardiac transplantations'), **dentaler Pfleger/*Dentalpfleger* ('s.o. looking after teeth')

As in English, agent nominals with a native noun as non-head of a compound in object-related reading are perfectly acceptable and quite productive:

(59) *Herztransplanteur* ('surgeon performing cardiac transplantations'), *Zahnpfleger* ('s.o. looking after teeth'), *Stadtplaner* ('city planner'), *Frauenversteher* ('man showing understanding to women')

As for agent nominals derived from transitive verbs in general, we may have combinations with relational adjectives as in (60).

(60) *ärztlicher Betreuer/Beobachter* ('medical superviser/observer'), *weibliche Verehrer* ('female admirers')

An agentive interpretation of the adjective faces the same problems as it does in the case of agentive intransitive verbs, cf. (47). This is because the agent-role is already realized by the referential argument of the noun, while the semantic contribution of the adjective reduces to further specifying this argument. Now looking back at the examples (52) and (53), we see that the same type of interpretation is available with event nominals too, cf. (61) and (62), respectively.

(61) *the assessment by the nursing staff acting as physicians*
(62) *the cleaning by the cleansing services as representatives of the city*

A search of the IDS-corpora yields numerous examples of this type, cf. (63)-(65).

(63) *polizeiliche Abklärungen durch die Fachgruppe Kinderschutz* (lit. 'police-related clarifications by the child protection department'), *ärztliche Untersuchung von Frauen durch Männer* ('medical examination of women by men')
(64) *nach einer monatelangen spanischen Belagerung durch Frederik von Toledo* ('after a Spanish siege of many months by Frederic of Toledo')
(65) *nach der normannischen Eroberung durch Wilhelm den Eroberer* ('after the Norman conquest by William the Conqueror')

In all these examples the real agent, represented by the *durch*-phrase, can be considered as related to, or being a representative of, the group or institution denoted by the nominal base of the relational adjective.

Finally, relational adjectives in construction with event nominalizations may also function as instrumentals (*manuelle Arbeit* 'manual work'). Locative uses, in contrast, are highly marked (*Berliner Aufenthalt* 'stay in Berlin'), while directional ones are excluded (**französische Reise* 'journey to France').[13] None of these uses is possible with agent nominalizations (**manueller Arbeiter* 'manual worker', **Berliner Wanderer* 's.o. hiking in Berlin', **amerikanischer Einwanderer* 'American immigrant').

To sum up: In German relational adjectives as potential argument realizations seem to be compatible primarily with the subject role, including non-agentive subject arguments of intransitive verbs. Other argument roles, especially the object argument, are not accessible. A subject-related interpretation can be blocked by an additional agent phrase (a *durch*-phrase); an interpretative connection with the agent phrase can remain. Instrumental interpretations are possible, but locative and directional ones are either marked or ruled out, respectively.

3.4   French

French deverbal nominalization basically relies on the productive suffixes *-tion* (and its variants like *-isation, -ification, -ation, -sion*), *-age* and *-(e)ment*. In contrast to German there is, in the core grammar, no nominalized infinitive (cf. Grevisse 1993, 255). The gerund has exclusively verbal argument realization. The English gerund suffix *-ing* occurs only in loanwords (*le dancing*) and will be neglected here.

Nominalizations derived from intransitive verbs

There are strong parallels with both English and German regarding the use of relational adjectives as attributes of nominalizations of intransitive verbs. The adjectives can realize agentive (cf. [66]) and non-agentive subject arguments (cf. [67]).

(66) *le voyage présidentiel* ('the journey by the president'), *la participation féminine* ('the female participation'), *l'intervention policière* ('the intervention by the police')

(67) *la défaillance humaine / le ratage humain* ('the human failure'), *le mouvement pendulaire* ('the pendular movement'), *le rayonnement solaire* ('the solar radiation'), *le développement économique* ('the economic development'), *l'éruption volcanique* ('the volcanic eruption'), *la division céllulaire* ('the cellular division'), *l'arrêt cardiaque* ('the cardiac arrest')

Recall that in German and English we have compounds competing with, or even replacing, relational adjectives with nominalizations of non-agentive verbs, cf. (27),

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[13]   For an explanation cf. Eichinger (1982, 134f.). The directional use is attested in 18th-century German, compare the title of Goethe's travelogue *Die italienische Reise* ('Italian Journey').

(42), (43) and (48). N-N compounds, which are peripheral anyway, have no comparable semantic pattern.[14] Bound *de*-constructions are in many cases also forbidden (cf. Wandruszka 1972, 179), so only referential possessive constructions compete with the relational adjective-noun construction:

(68) *le rayonnement solaire – *le rayonnement de soleil – le rayonnement du soleil*
('solar radiation')
(69) *la division céllulaire – *la division de céllule – la division des céllules*
('cell division')

Nominalizations derived from transitive verbs

As in English and German, nominalizations of French transitive verbs allow relational adjectives to relate to the subject (agent) argument:

(70) *la répétition filiale du comportement maternelle* ('the repetition of maternal behavior by the daughter'), *la fermeture policière de la Sorbonne* ('the closing down of the Sorbonne by the police'), *la persécution judiciaire des criminels* ('the judicial persecution of criminals'), *l'observation féminine des élections* ('the observation of elections by women'), *la revendication populaire de réunification* ('people's demand of reunification')

In (70) the object argument is realized by a referential *de*-phrase following the relational adjective. A realization as a non-head in an N-N compound is excluded (cf. Note 14). However, in contrast to German there are lots of instances where the relational adjective seems to permit an object-related interpretation:

(71) *l'élection présidentielle* ('the presidential election'), *l'éducation infantile / enfantine* ('the education of children'), *l'élevage bovin/ovin/porcin* ('the bovine/ovine/porcine breeding'), *l'exposition florale* ('the floral exposition'), *le soin capillaire/dentaire* ('the care of one's hair / the dental care'), *la production céréalière/électrique/charbonnière/laitière* ('the production of cereals/electricity/coal/milk'), *la pollution environnementale* ('the environmental pollution'), *la protection maternelle et infantile* ('the protection of mothers and children'), *la planification/renovation/destruction urbaine* ('the urban planning/renovation/destruction'), *la revendication salariale* ('the wage demands')

Unlike in German, where the semantic opposition between the two expressions in (54) is explained by the fact that the relational adjectives are clearly subject-related, the corresponding French nominals are somewhat ambiguous:

(72) *l'éducation parentale* (agent/?patient) *des enfants* (patient/?agent)
(73) *l'education infantile / enfantine* (agent/?patient) *des parents* (patient/?agent)

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[14] As mentioned by Rohrer (1977, 85) the subject-argument of nominalizations derived from intransitive verbs cannot be realized as the non-head of a N-N compound, as e.g. in *coucher-soleil* instead of *coucher de soleil* ('sunset'). Objects in nominalizations based on transitive verbs are excluded in general as well. Rohrer (1977, 87) mentions only very few examples like *prevention-incendie* ('fire prevention').

Object-related adjectives are themselves in competition with *de*-phrases. Again, bound *de*-phrases are quite rare, at least with singular nouns:

(74) *l'élection *de / du président* ('the election of the president'), *la rénovation de *(la) ville* ('the renovation of the city'), *la pollution *d'environnement / de l'environnement* ('the pollution of the environment')

(75) *le lavage de dents* ('the teeth brushing')

Most of the examples with object-related readings are (more or less) fixed expressions or collocations. They denote the object resulting from a process (*la production céréalière* 'the [amount of] produced cereals'), the general procedure to do a thing (*le lavage dentaire* 'the recurrent procedure/habitude/task of cleaning one's teeth') or some institutionalized measure/activity (*la protection maternelle* 'the maternal protection').

Note also that even object-related adjectives are possible, though rare, in construction with agent nominals (cf. Wandruszka 1972, 47), which are mainly derived by the suffix *-eur* or the participle suffix *-ant*:

(76) *l'acquéreur immobilier* ('the purchaser of property'), *le directeur commercial* ('the sales manager'), *l'assistante médicale* ('the [female] medical assistant'), *le planificateur urbain* ('the urban planner'), *le transplanteur cardiaque* ('the surgeon performing cardiac transplantations')

The corresponding event nominals are usually available (*l'acquisition immobilière*, *la transplantation cardiaque*, etc.), but there is not necessarily a correspondence in the other direction (**le protecteur maternel*). For several of the object-related examples, the link to the nominal base is quite loose: There is no French noun stem, but only a Latin or a Greek one (like Latin *urb-* 'city', *medic-o/u* 'medical doctor', Greek *kard-ia* 'heart') and moreover the adjective can be associated with more than one nominal concept: So *médical* can mean 'what is related to medicine' or 'what is related to medical doctors/a medical doctor' (cf. Trésor 1985, 566f.).

Analogously to English, relational adjectives in construction with event or agent nominals may occur as instrumentals (*la perception oculaire* 'the ocular perception', *le travailleur manuel* 'the manual worker'), locatives (*la randonnée insulaire*, 'the insular hiking', *le randonneur montagnard* 'the mountain hiker') and directionals (*l'expédition polaire* 'the polar expedition', *le voyageur lunaire* 'the moon traveller').

To summarize, in French relational adjectives are primarily compatible with the subject role. However, object-related uses occur as well, primarily in construction with event nominals but also, to a lesser degree, with agent nominals. In addition, instrumental, directional and locative roles of relational adjectives can be found with both types of nominalizations. There are strong restrictions on the use of bound prepositional attributes (or N-N compounds) in both subject and object argument positions. These expressions, therefore, do not constitute a systematic alternative to relational adjective-noun constructions.

4. Summary and conclusion

Summing up, we have arrived at three basic observations in the course of our comparative examination of adjective-noun constructions. First, object-related readings appear to be more restricted than subject-related readings, being found only in French and English. Second, if possible at all, object-related readings are more or less confined to those constructions where the denominal head noun denotes a result state or object. Subject-related readings, in contrast, are also admissible with process nominalizations. Third, we have seen that both a subject-related and an object-related reading may always be overridden by the addition of an appropriate agentive or possessive phrase.

As for the second observation, an analogous claim with respect to Spanish and Italian can already be found in Bosque and Picallo (1996, 356-9). Their explanation for the relevant distinction consists basically in assuming that the requirements for argument satisfaction (or 'theta-role discharging') are simply less constrained with state nominals than with process nominals. We could think of a functional motivation for this assumption along the following lines: Crosslinguistically, it can be observed that deverbal nouns tend to realize their arguments syntactically either in a more 'verb-like' or in a more 'noun-like' fashion (Comrie 1976; Koptjevskaja-Tamm 1993). In the first case, the form of an argument tends to follow the morphosyntactic subcategorization requirements of the underlying verb. In the second case, it tends to be realized like a typical noun modifier. Now, result nominals denoting states or objects are certainly more noun-like than process nominals in terms of their semantics: states and objects are more time stable entities than events, and thus closer to the ontological type of what nouns prototypically refer to. That may explain why result nominalizations allow their object arguments to be realized by a category, viz. adjectives, that is typical of noun modifiers but inadmissible for verbal arguments. In contrast, the types of PPs realizing arguments in nominalizations either contain semantically vacuous prepositions (e.g. English *of*, German *von*, French *de*), which is why they are semantically most similar to NPs, or their preposition is indicative of agentive phrases (e.g. English *by*, German *durch*, French *par*) that also occur with verbal passive constructions.[15]

The question now remains why there appears to be no comparable restriction on the subject argument position of nominalizations. As we have seen, even process nominalizations allow their subject argument position to be realized by relational adjectives. Proposals to account for this asymmetry can also be found in the literature (cf. Kayne 1981, 111; Giorgi / Longobardi 1991, 125-9; Bosque / Picallo 1996, 355-6). They more or less amount to saying that subjects are exempt from any such restrictions because of their being 'external arguments,' which,

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[15]   Another line of argument would be following Grimshaw (1990, chap. 3) in claiming that result nominals do not have an argument structure in the first place. But see Ehrich and Rapp (2000) for a more sophisticated position on the question of argument structure with respect to different types of nominalizations.

among other things, implies that they are not strictly subcategorized by the verbal head but by the verb phrase as a whole (cf. Kayne 1981, 111). We do not want to go into this argument here. It should be noted, however, that comparable asymmetries between subject and object arguments in nominalizations are not hard to find. For example, in Slavonic languages personal adjectives show a clear preference to realize subject arguments, while object argument positions are more likely to be satisfied by possessive genitives (cf. Corbett 1987). In English, we see that in verbal gerunds the subject may optionally occur as a possessive genitive while the object has to be realized as a plain NP. A functional explanation for these types of asymmetry may start from the idea that object arguments are more relevant for event constitution than subject arguments. This holds equally for process and result state nominalizations. A state cannot exist on its own but only as being a state of something; likewise, a process necessarily involves an 'undergoer' (a patient or theme), but not necessarily an agent, as the existence of processes denoted by nominalizations based on non-agentive verbs shows (e.g. *development*). It may therefore be the case that the categorial requirements for the realization of objects are stronger than those for subjects. That is to say, objects must be realized by prototypically 'thing' denoting phrases.

Next there is the question of why object-related adjectives are possible in French and English at all. Note that object-related interpretations are prohibited not only in German, but also in Russian (cf. Mezhevich 2002) and Hungarian. There is no doubt that French and English share these constructions because of their common Latin heritage. In Latin, as in Greek, they instantiated a widely used pattern, a relational adjective often being used 'in exchange' to an attributive genitive (cf. Kühner / Stegmann 1914, 208). Thus, we frequently find structures like *popularis admiratio* 'popular admiration', where the adjective substitutes a *genetivus subiectivus*, but also such as *enumeratio oratoria* ('enumeration of speakers'), *frumentaria largitio* ('donation of cereal') with the adjective occurring in lieu of a *genetivus obiectivus* (cf. Kühner / Stegmann 1914, 209ff.). The same applies to constructions with the adjective functioning as a directional or locative, which are equally common in Latin (*iter Brundisinum* 'journey to Brindisi').

The Romance languages inherited this pattern from Latin, and English, in turn, inherited or borrowed it from French. Occasionally, there are counterparts in English and French of the relevant Latin relational-adjective noun construction, witness *popular admiration/admiration populaire* or *cereal donation/donation céréalière*. Note that in English, the pattern has not been fully extended to the native vocabulary, since non-native relational adjectives are not attested in this type of construction. For example, along with *canine breeding* we do find *dog breeding*, but not *doggish breeding*, though *doggish* may be perfectly well used in a relational sense in other contexts.

Let us now turn to our last point, i.e. the question of why any thematic interpretation of relational adjectives may be overridden by the addition of appropriate agentive or patientive phrases. One solution could be to assume that in such cases the semantic contribution of the adjective shifts from argument realization to a

classification of the event. For example, in a construction like *medical examination by Dr. Jones* the role of the adjective can be described as specifying a special type of examination (a medical one, as opposed to, say, a judicial one). However the problem with this proposal is that in cases like *colonial administration of India* the most plausible reading would rather be 'administration of India as a colony'. In other words, what the adjective specifies here is not the event denoted by the nominal, but the semantic role of the object argument. Importantly, the next to last example could be analyzed in exactly the same way, viz. as meaning 'examination by Dr. Jones in his role as a medical doctor'. Now if we look at adjective-noun constructions that do not involve agentive or patientive phrases, we see that the analysis applies even here. These constructions, too, can be understood in such a way that the adjective specifies the semantic role of the respective subject or object argument while a 'true' referential argument remains contextually implicit. What distinguishes examples like *colonial administration* from *colonial administration of India*, then, is the mere fact that the otherwise implicit argument has become explicit in the latter case. Note that this analysis also accounts for agent nominalizations with subject-related adjectives like *female worker*. Examples of this type can be interpreted with the adjective specifying the agent role provided by the underlying verb and the referent of the denominal noun itself filling that role. The price one has to pay for the proposed unified analysis, however, is that relational adjectives can no longer be said to fill an argument position *sensu strictu*. But this we would rather consider a benefit.

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