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**Studies in Linguistics and
Linguistic Data Science**

Simon Masloch, Johanna M. Poppek, Amelie Robrecht, Tibor Kiss

**Syntactic Pattern Distribution
Analysis of Experiencer–Object
Psych Verbs**

An Annotation Manual

Linguistic Data Science Lab

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Editor:

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Studies in Linguistics and Linguistic Data Science

Linguistics is an established area of study; Linguistic Data Science is a relatively new field within linguistics that aims at combining results and methods from theoretical linguistics with methods from Data Science and Machine Learning.

The ultimate goal of Linguistic Data Science is to provide results within linguistics that have a strong empirical base and thus facilitate our growing understanding of all formal areas of linguistics (which we use in a broad term, comprising formal methods in semantics and pragmatics in addition to phonology, morphology, and syntax). We follow other areas within science and the humanities by stating that knowledge is justified belief, that belief is based on evidence, and that evidence, finally, can only be determined on the background of theoretical assumptions.

Studies in Linguistics and Linguistic Data Science will publish results that follow these leads. The publication language will be English, but sometimes results will be published in German, for the simple purpose to make these results available.

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Syntactic Pattern Distribution Analysis of Experiencer-Object Psych Verbs

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Abstract

This manual contains the detailed annotation guidelines used to create a database for the syntactic (and in part semantic) behaviour of 64 German experiencer object verbs. These verbs are annotated for their syntactic pattern, the semantic nature of their stimulus (if present), the presence of a stimulus PP and various other features. Both the manual as well as the resulting database can be used for testing theoretical hypotheses as well as for experimental and computational tasks.¹

KEYWORDS: experiencer-object verb, psych verb, stimulus subject verb, German, annotation, syntactic pattern, database, semantic stimulus type

1. Introduction

The following Annotation Manual and the resulting database are embedded in a larger project targeting the grammatical behaviour of German so-called experiencer-object (henceforth EO, also called “stimulus subject”) verbs, a subclass of psych verbs. The project aims for an empirically valid and data-driven approach towards this verbal class whose general syntactic features and classification inside the verbal domain are still under discussion. This particularly extends to the questions of the lexicogrammatical relation between a group of verbal lexemes (pre-classified as EO verbs in the literature) and certain syntactic constructional patterns that are considered prototypical for this assumed class. Since the unanswered questions appear to be multidimensional, issues regarding both the properties of verbs and their arguments as well as syntactic slots, an annotation study should aim for reflecting the phenomenon from different angles. This particularly holds for issues of polysemy and the assumed ability to occur in distinct syntactic slots.

¹ The research reported here was supported by the Deutsche Forschungsgemeinschaft (DFG) grant KI 759/9-1. We are very grateful to Tamara Stojanovska for help with the manuscript. The data resulting from the annotation effort presented here is publicly available from: https://github.com/Linguistic-Data-Science-Lab/German_EO_verbs

Patterns identified for German need to be verified for other languages in future research. The following sections will provide both an overview on the phenomenon and discuss theoretical aspects that are reflected in the annotation. Part II describes the general structure of the annotation guidelines and the dataset as well as the actual annotation process. Part III contains the complete annotation manual with detailed explanations and examples for every annotation.

1.1 Experiencer Object Psych Verbs

Psych verbs, particularly those whose experiencer argument is (normally) syntactically realised as the object are claimed to be *grammatically* peculiar in the linguistic literature at least since Belletti and Rizzi (1988). In this paper, the authors also introduced a tripartite distinction of the class² in Italian with respect to the syntactic realisation of experiencer and stimulus (*theme* in their terms) argument of the verb that has become very influential: nominative experiencer and accusative stimulus as in (1)³, accusative experiencer and nominative stimulus as in (2), and dative experiencer and nominative stimulus as in (3). We will call them experiencer subject (psych) verbs (ES), accusative experiencer object (psych) verbs (EO), and dative experiencer object (psych) verbs (EO), respectively.

(1) Gianni teme questo.
Gianni fears this

(2) Questo preoccupa Gianni.
This worries Gianni

(3) A Gianni piace questo.
to Gianni pleases this

Within the Government and Binding framework (but not only there), the existence of these classes posed a challenge for theories of linking between syntax and semantics. This led to investigations of the verbs which resulted in claims that these – and particularly accusative EO verbs – display a deviant behaviour compared to other (“transitive”, especially agent-patient) verbs. This offered loophole: Syntacticians postulated structures for EO verbs that adhered to the general rules the researchers assumed and were supposed to simultaneously explain the verbs’ deviant behaviour (prominent examples include (Belletti & Rizzi, 1988; Pesetsky, 1995)). Landau (2010)

² Actually, both propose it as a basic distinction, explicitly ignoring derivational morphology – a fact which is, by our impression, frequently overlooked in the literature.

³ Italian examples ((1)–(3)) are Belletti and Rizzi’s (1988, p. 291)’s (1–3a.).

presents so-called “psych properties”: ways in which psych verbs differ from other verbs cross-linguistically. It is noteworthy that psych verbs are usually singled out based on their semantics. Landau (2010), for example, regards “any verb that carries psychological entailments with respect to one of its arguments (the experiencer)” as a psych verb (p. 137). To explain why verbs fulfilling this *semantic* criterion should behave in a *grammatically* unusual way, he proposes that “[e]xperiencers are mental locations, that is, locatives” (p. 6) from which it follows that “[a]ll object experiencers are oblique (or dative)” (ibid.), so that their status as direct objects in accusative EO verbs is only apparent. This (prima facie) elegant connection between semantics and syntax has of course been challenged: For example, Fábregas (2015) argues that in Spanish not all verbs semantically classified as psych verbs belong to the class that is syntactically special. For German, it has been claimed recently by Hirsch (2018) that psych verbs do not form a uniform class, and also do not necessarily display unexpected or deviant syntactic behaviour.

1.11 An Annotation Scheme

Psych verbs in general, and EO psych verbs in particular have often been approached with a specific pattern of realization in mind. In the case of EO psych verbs, this pattern is a subtype of a transitive construction where the role of the stimulus (STM) is assigned to the subject, and the role of the experiencer (EXP) is assigned to the object. But even superficial scrutiny soon reveals that *forms* of the respective verbs appear in other syntactic patterns. The semantics assigned to the verbs on these patterns is usually transparently linked to the semantics of the ‘prototypical’ pattern, cf. *amüsieren* (*amuse*) on the transitive pattern (X-STM_V_Y-EXP) in (4) and the intransitive one (X-STM_V) in (5). In other cases, a link is much harder to detect (e.g., in cases we mark with the comment 4.1.4.8 *resultative_object* like (6)). In some cases, it appears rather opaque, even to the effect that a description of the verb as EO verb appears ‘wrong’, because the pertinent syntactic and semantic pattern of an EO verb rarely occurs with the verb in question - as in the case of *ausreichen*, which rarely has a psych interpretation in our data .

- (4) Schon das hat ihn **amüsiert** .
 even that.NOM has him.ACC amused (NZZ_1994_05_06_a199_seg3_s14)
 Even that amused him.

(5) Die meisten Ergebnisse verblüffen, **amüsieren** und überzeugen.
the.NOM most.NOM results.NOM amaze amuse and convince
(NZZ_1996_03_21_a168_seg9_s5)
Most of the results amaze, amuse, and convince.

(6) Vorerst haben die "Fairen" **Kritik** der "Gerechten" provoziert.
for.now have the.NOM fair.NOM criticism.ACC the.GEN just.GEN provoked
(NZZ_1997_03_19_a51_seg4_s12)
For now, the "fair ones" have provoked criticism from the "just ones".

While the possibility of a verbs' occurrence in certain syntactic environments has played a prominent role in the literature from the beginning (especially their ability to passivize, cf. Belletti and Rizzi (1988), Pesetsky (1995), Landau (2010) among others) and alternations between realisation patterns have gained some prominence in the literature recently (cf. e.g. Alexiadou & Iordăchioaia, 2014; Hirsch, 2018; Pijpops & Speelman, 2017a; Rott et al., 2020), we are not aware of a larger corpus study that investigates which patterns German psych verbs actually occur in. Engelberg (2015, 2018a) and Cosma and Engelberg (2014) look at 11 (German) verbs only, Becker and Guzmán Naranjo (2020) annotate 30 sentences for 12 "psych concepts" (in 7 languages), and Verhoeven (2015) performs annotations for 30 EO verbs, but she is interested in word order differences and does not aim to capture the whole syntactic distribution. If one limits the analysis to a small number of verbs and samples, one risks attributing verb-specific peculiarities to the whole (assumed) class and overlooking class-internal variation. Our aim is to close the gap by compiling a corpus of sentences containing German EO verbs from many different potential subclasses proposed in the literature, annotated with relevant syntactic and semantic features. These include – most importantly – the syntactic pattern the verb occurs in, but also the semantic aspect of psych status (not every verb will have a psych entailment in each example), the type of stimulus, and the form of the preposition in a stimulus-indicating PP (if present), as well as other factors which are typically represented by comments.

A dataset like the one resulting from these annotation efforts may be useful in multiple ways: It offers quantitative data that can be used to check and develop theories, but it can also serve as a reservoir of (counter-)examples. Additionally, it may be used as gold standard data to train and evaluate AI systems that are able to identify psych readings. Since we annotate all syntactic patterns we happen to find with our verbs, we can capture their syntactic behaviour, showing that there are more possibilities than one would naively expect (at least if, traditionally, one-lexical-entry-

per-syntactic-pattern is assumed, but – on the verb level – not everything goes.⁴ A careful investigation into these distributions may unearth regularities any theory of argument structure and the syntax-semantics interface must be able to explain.

The data is also useful when designing experiments because it can reveal (for example, via a Reliance Analysis, cf. Schmid, 2000) verbal preferences of the target construction for a non-psych reading that could cause interference effects. Also, the annotations enable the search for sentences fulfilling specific criteria, which can – in a modified form – be used in experiments in turn, cf. the methodology of *modified stimulus composition* as described in (Börner et al., 2019)). By annotating stimulus PPs, we provide data that can be used to investigate the semantics of the relevant prepositions. While there is much work on spatial and temporal readings of prepositions, a systematic investigation of the use of prepositions in the psych/emotional domain has yet not been performed, to the best of our knowledge. It is further hampered by the fact that the relevant readings of the prepositions are often not the predominant ones: In Masloch's (2021) data for *über* (*over, about*), the aggregated causal and object-of-emotion readings made up for only 7.27% of the German sentences annotated in a corpus of Parliament debates. Note that this number is almost certainly way too optimistic because infrequent readings are (on purpose) strongly overrepresented in his corpus.

I.III A Note on Syntactic Pattern Annotation

We distinguish 15 basic syntactic patterns. These may or may not combine with stimulus-indicating PPs (cf. 3.2), other stimulus adjuncts (cf. 3.4), control (cf. 3.3), and certain phenomena that we annotate using comments (cf. 4.1), which multiplies the possibilities. For example: The syntactic position usually occupied by the experiencer argument may not be filled with an NP referring to the experiencer itself but with an NP referring to a (non-physical) part or feature of them. We use the comment 4.1.4.5 *EXP-related_object* to annotate this, and observed the phenomenon within different syntactic patterns as exemplified in (7) and (8). While (7) is just an instance of the standard transitive pattern, (8) contains a so-called modal infinitive: An infinitive embedded under *sein*.

⁴ Of course, non-existence in a corpus does not proof ungrammaticality, but can indicate it, see the discussion in Kiss (2019).

(7) Den Blick **erfreut** das viele Schöne.
 the glimpse.ACC pleases the.NOM much.NOM beautiful.NOM
 (NZZ_1995_06_24_a215_seg3_s5)
 All those beautiful things please the eye

(8) Die Wall Street-Euphorie scheint durch nichts **einzuschüchtern** zu
 the Wall Street-euphoria seems by nothing to.intimidate to
 sein.
 be (NZZ_1996_02_16_a107_seg6_s1)
 It seems that nothing can lower the euphoria at Wall Street / people's euphoria
 for Wall Street.

Some of the phenomena we treated using comments might also be viewed as independent patterns, especially 4.1.2.3 *utterance_reading*, where the subject referent utters something and the verb indicates the way of uttering as well as the emotional state, cf. (9), and 4.1.4.8 *resultative_object*, where the experiencer is not the referent of the direct object NP, cf. (10).

(9) "Ich riskierte etwas zu viel", **ärgerte** er **sich**.
 I risked a.bit too much annoyed he REFL
 (NZZ_1994_08_29_a114_seg2_s6)
 "I risked a bit too much", he said, and the way he said it showed that he was
 annoyed by it.

(10) Vorerst **haben** die "Fairen" Kritik der "Gerechten" **provoziert**.
 for.now have the.NOM fair.NOM criticism.ACC the.GEN just.GEN provoked
 (NZZ_1997_03_19_a51_seg4_s12)
 For now, the "fair ones" have provoked criticism from the "just ones".

While the patterns are described in the annotation scheme below and we need not duplicate these descriptions here, some notes are due on specific patterns because of their theoretical significance. In German, verbal and adjectival passive (also called eventive and stative passive) are clearly distinguished by the form of the auxiliary: *werden* (*to become*) for the verbal passive, *sein* (*to be*) for the adjectival one. We annotate these in different patterns: 2.4 *werden_V-PII* and 2.3 *sein_V-PII*. Discussions of passivation possibilities (for accusative EO verbs) have been central in the research on psych verbs since the late eighties. So-called unaccusativity accounts (where the "subject" is not considered a real subject, as proposed by Belletti and Rizzi (1988)) presume that verbal passivation should not be possible. Landau (2010) – who claims that accusative EO verbs may generally have an agentive, (nonagentive) eventive, and stative reading – offers a typology of psych passives in which stative accusative EO

verbs never passivise, agentive ones can passivise universally, and languages differ in a predictable way as to the question whether nonagentive eventive verbs can passivise. Stative accusative EO verbs are also taken to disallow verbal passivation in the recent literature on German psych verbs, as are dative EO verbs (cf. Hirsch, 2018; Temme, 2018). According to Hirsch (2018), the same holds for the adjectival passive.⁵ With regard to eventive EO verbs, he holds the opinion that all of them can form the stative passive while only the ones having an agentive reading form the verbal passive (even on their nonagentive readings). Möller (2015) also describes the relation between agentivity and passive, but further argues that the apparent lack of passivation does root in semantic aspects of EO verbs while the functional role of a canonical *werden*-passive is overshadowed by a number of other possible alternations, mainly stative passive, reflexivisation, PPs etc. The results of our annotation study render this unlikely, see (Poppek et al., in prep, section 2.2).

Another aspect traditionally linked with unaccusativity is perfect auxiliary selection: It has been argued that unaccusative predicates select *sein* (*to be*) while unergative ones select *haben* (*to have*) (cf. the literature cited in Strobel, 2008). Perfect auxiliary selection in German is a topic debated controversially. In any case, we observe that most verbs treated as unaccusatives by these accounts select *haben*. Accordingly, authors favouring the unaccusativity account dismiss this criterion (i.e. Belletti & Rizzi, 1988; Fanselow, 1992; Hirsch, 2018b). Dative EO verbs selecting *sein* as their perfect auxiliary we included in our annotation efforts are *schwerfallen* (*to find difficult*), *nahegehen* (*to afflict, to upset*), *aufstoßen* (*to strike (negatively)*), and *auffallen* (*to strike*).

On the reflexive pattern 2.6 *X_V_refl*, the verb is used as a reflexive verb. The subject assumes the role experiencer while the stimulus may be expressed by a PP. Reflexivisation is a means of de-transitivising causative verbs (in German), but some authors recently have argued that only some of the psych verbs alternating this way take part in the general causative alternation (Hirsch, 2018; Rott et al., 2020). Rott et al. (2020) call the alternation “psych alternation” and offer a typological perspective on it. *EXP_V_refl_Gen-STM* and 2.12 *Nom-EXP_V* are also patterns belonging to the de-transitivised part of the alternation, the former one differing from pattern 2.6 *X_V_refl* only in the way the stimulus is expressed (genitive NP vs. PP), the latter one in the way the alternation is marked morphosyntactically (*ablaut* vs. reflexivisation).

⁵ He notices that the adjectival passive may be possible (under a job-done interpretation) on a different (activity) reading of the verb (p. 150).

On pattern 2.8 *NoAux_V-PII* the verb's participle II is used as an adverb. We are not classifying such uses as verbal, but the forms have been extracted automatically and – just like in the case of the adjectival passive – eventual differences among the verbs regarding their distribution are noteworthy and require a principled explanation.

The existence of 2.11 *X_CAUS_V_Y-EXP_PP* (as in (11)) in German has been noticed by Haider (1993, p. 117) and Hirsch (2018, p. 83). Here, a subject cause causes the object experiencer to be in the emotional state expressed by the verb towards an object. Analyses of similar constructions in other languages are provided (among others) by Reinhart (2003, pp. 271–274) and Royo (2019).

- (11) 1665 hatte Kara Mehmet Pascha die Wiener Oberschichten für das
 1665 had Kara Mehmed Pasha the Viennese upper.classes.ACC for the
 "schwarze Wasser " **begeistert**.
 black water enthused. (NZZ_1993_07_28_a81_seg7_s16)
 In 1665, Kara Mehmed Pasha made the Viennese upper classes get excited
 about the “black water”.

The pattern 2.9 *Acc/Dat-EXP_V* is used if there is an experiencer object but no phoric subject. While there are verbs that do not need a nominative argument in German (*ekeln* (to disgust), as in (12), is one of them), usually a non-phoric *es* is needed (as in (13)). This, however, may be dropped in spoken language resulting in examples like (14). We use a comment to indicate whether a non-phoric *es* is present or not, but we believe that a further subclassification should be a part of analysis, not annotation.

- (12) Die «Nachtbücher» des Alfred Kantorowicz sind vor allem seine
 the night.books.NOM the.GEN Alfred Kantorowicz.GEN are above all his
 papierene «Klagemauer», vor deren «Subjektivismus» und «leichtfertig
 paper Wailing.Wall before whose subjectivism and inconsiderately
 formulierten Affekten» ihn manchmal **ekelt** [...].
 formulated affects him.ACC sometimes disgusts
 (NZZ_1996_04_20_a224_seg3_s11)
 Alfred Kantorowicz's “night books” are above all his paper “Wailing Wall”,
 whose “subjectivism” and “inconsiderately formulated affects” sometimes
 disgust him.

- (13) **Es gefällt** ihm hier [...].
 it pleases him.DAT here (NZZ_1993_12_21_a49_seg6_s6)
 He likes it here.

- (14) **Tut** **mir** **leid!**
 feel.sorry.3SG me.DAT PRT⁶ (NZZ_1999_02_05_a160_seg6_s33)
 I'm sorry.

If the verb in question is embedded under a raising predicate, we do not annotate this. This is because the raised argument is preserved so that a regular annotation is possible. In contrast, control sometimes leads to a certain lack of clarity because, given the nature of the discussed verbs, the stimulus will usually be the PRO subject – think about adjunct control, control shift, implicit control, non-local control, variable control and so on. Hence, we annotate *control* (cf. 3.3 *Control*). Another phenomenon where a semantic argument of the verb is missing is 2.14 *sein_zu-Inf*, modal infinitives with *sein* (*to be*) as in (15).

- (15) Die Kriminellen **seien** mit solch einer "Farce" nicht **zu erschrecken**.
 the criminals are.SBJV with such a farce not to frighten
 (NZZ_1998_03_07_a9_seg6_s3)
 It is impossible to frighten criminals with such a "farce". / The criminals are not to be frightened with such a "farce".

I.IV Non-psych Readings

If we classify as a psych verb any verb that *can* lead to psychological entailments, many verbs will fall into this class that also have different readings, which in some cases will be far more prominent. A notable example is the German verb *bewegen* (*to move*) which can be used in a psych reading, but from a quantitative perspective, this is largely overshadowed by the spatial non-psych reading. When we annotate examples extracted from a corpus because they contain a specific verb (form), we may find that the (putative) psych verb does not have a psych reading at all or that it is ambiguous between a psych reading and a non-psych one. We capture this by using a variable to annotate non-psych occurrences (cf. 1.2) and a comment to distinguish ambiguous ones (cf. 4.1.2.2).⁷ (16)–(18) illustrate the distinction: The verb *schwerfallen* (*to be difficult to*) does not give rise to psych entailments in (16). In (18), however, it does, and in (17) both readings are possible.

⁶ Verbal particle

⁷ Actually, we use both in cases where the non-psych reading is far more salient although the psych reading might not be absolutely inconceivable.

- (16) Doch da die strukturellen Unterschiede [...] fortbestehen dürften [...],
 But because the structural differences persist might,
 dürfte es dem Dollar **schwerfallen**, sich gegen eine langfristige
 might it the.DAT dollar.DAT be.difficult.to REFL against a long-term
 Tieferbewertung erfolgreich zu Wehr zu setzen.
 lower.valuation successfully to defence to set
 (NZZ_1993_06_14_a141_seg6_s18)
 But because the structural differences are likely to persist, it will be difficult for
 the dollar to successfully resist a long-term depreciation.
- (17) Einzelnen Videasten dürfte es **schwerfallen**, sich umzustellen.
 Individual.DAT videographers.DAT might it be.difficult.to REFL adjust
 (NZZ_1993_12_24_a33_seg5_s12)
 It will be difficult / emotionally challenging for some videographers to adjust
 themselves
- (18) Da **fiel** die Entscheidung nicht **schwer**.
 There be.difficult.to the decision not PRT.
 (NZZ_1995_03_31_a227_seg18_s11)
 So, it was not hard to decide.

The reasons for the existence of the non-psych reading may differ. While incorrect lemmatisation of the original data particularly in cases of homonymy of specific verb forms is possible (as in (19): the past participles of *fallen* (*to fall*) and *gefallen* (*to please*) are homonymous), three less trivial sources are relevant: homonymy, polysemy, and vagueness.

- (19) Dann **sind** wir kopfüber in die Freiheit **gefallen**. "
 Then are we headfirst into the liberty fallen
 (NZZ_1993_02_06_a160_seg4_s70)
 We fell headfirst into liberty then.

While *zusetzen* (*to add*) in (20) is clearly homonymous to *zusetzen* (*to worry*) in (21), the distinction between polysemy and vagueness might not be that easy to draw without applying semantic tests. Is the psych reading of *bewegen* (*to move (emotionally)*) (22) really different from the non-psych one (23)? What about *stören* (*to disturb, to bother*) or *guttun* (*to benefit, to do good*)?

- (20) [...] Zu einheimischem Traubenmost [...] darf reine Saccharose [...] **zugesetzt**
 To domestic grape.must.DAT may pure saccharose added
 werden.
 become. (NZZ_1993_05_22_a70_seg16_s1)
 It is allowed to add pure saccharose to domestic grape must.
- (21) Diese Verantwortungslast **setzte** offensichtlich der SHB immer
 This responsibility.burden.NOM worried obviously the SHB.DAT ever
 mehr **zu**.
 more PRT (NZZ_1994_01_18_a50_seg9_s1)
 The burden of this responsibility obviously worried the SHB more and more.
- (22) Gerade Reagan hat es [...] fertiggebracht [...] die Menschen zu
 of.all.people Reagan has it managed the humans.ACC to
bewegen.
 move (NZZ_1993_08_09_a20_seg2_s14)
 Reagan, of all people, managed to move people.
- (23) In der ersten März-Woche hatte er sich noch um 16 800 Yen **bewegt**.
 In the first March-week had he REFL still by 16,800 Yen moved
 (NZZ_1993_04_08_a164_seg4_s3)
 During the first week of March, he was still moving by 16,800 Yen.
- (24) Da es bisher keine geregelte Frequenzverteilung gibt, **stören**
 Because it yet no regulated distribution.of.frequencies exists interfere
 viele der kleinen Sender [...] den Empfang des staatlichen
 many the.GEN small.GEN transmitters.GEN the reception the.GEN state.GEN
 Programms.
 programme.GEN (NZZ_1993_04_23_a129_seg3_s9)
 Since there is no regulated distribution of frequencies [probably a bandplan is
 meant here] so far, many of the small stations interfere with the reception of the
 state/public programme.
- (25) Dass er oft als "überehrgeiziger Pappeli" belächelt wird, **stört**
 That he often as overambitious Pappeli derided becomes bothers
 Zollinger wenig.
 Zollinger little (NZZ_1993_12_01_a96_seg6_s1)
 The fact that he is often ridiculed as an "overambitious Pappeli" does not bother
 Zollinger much.

(26) Etwas längere Pausen zwischen den Stücken hätten zudem den
slightly longer breaks between the pieces have.SBJV moreover the
Hörerinnen und Hörern sowie den Werken **gutgetan** [...] F
listeners and listeners as well as the works benefited
(NZZ_1995_05_16_a153_seg2_s12)
Slightly longer pauses between the pieces would have benefited the listeners as
well as the works.

If a verb appears to be ambiguous between a psych and a non-psych reading in a large portion of the available examples, one may take this as a hint that the verb does not in fact possess two distinct readings but just one, which is vague with regard to the psych/non-psych distinction.

I.V Stimulus Types, Agentivity and Animacy

With regard to psych verbs, agentivity is one of the most important, yet also one of the most controversial aspects. Its importance manifests itself in claims like Landau's (2010), who holds that only (some) accusative EO verbs can have an agentive reading, and that they do *not* display a special behaviour when used this way (p. 6). Its controversial status relates to the question which verbs can have an agentive reading, which is well captured in the following quote from Hirsch (2018) regarding German psych verbs: "Rather different claims are made about the classification of the same verbs, e.g. with respect to agentivity [...]. Not only is there no consensus about the assignment of the verbs to different classes, [...] but, moreover, different claims are made with respect to the behaviour of the same verb in the same test" (p. 75f.). Möller (2015) holds the category as generally open towards contextually coerced agentivity readings, though this is mostly realised through semantic affinities towards certain readings, not real grammatical restrictions. With few exceptions (e.g. *wundern*, (*to wonder*)), EO verbs are interpreted to license a reading specifying an action that results in a psychological state. This also indicates difficulties regarding a direct annotation of "agentivity". Additionally, the verb can be taken to have an agentive (in a naive sense) reading in most of the examples involving an animate stimulus, although an agentive interpretation might not always be the most prominent one. Example (27) clearly has an agentive as well as a non-agentive reading while in (28) an agentive reading is present but most likely not the intended interpretation.

(27) In dieser Rolle **ärgert** er viele, vor allem aber die SVP des Kantons
in this role annoys he many above all but the SVP the.GEN Canton.GEN
Bern.

Bern (NZZ_1995_09_25_a270_seg8_s5)

He annoys many people in this role, but especially the SVP of the Canton of
Bern.

(28) In den vergangenen Spielzeiten **verärgerte** der Holländer die
in the last seasons annoyed the Dutchman.NOM the
PSV-Anhänger mit schwachen Leistungen.

PSV-fans.ACC with weak performances

(NZZ_1993_07_12_a106_seg1_s4)

In previous seasons, the Dutchman annoyed the PSV fans with poor
performances.

As in other corpus studies on psych verbs (Engelberg, 2018; Levin & Grafmiller, 2013; Pijpops & Speelman, 2017), we do not annotate agency directly but animacy (or rather: very broad ontological stimulus types) instead. If a stimulus is animate but clearly not agentive, however, we use a respective comment to indicate this (cf. 4.1.3.6 *clearly_non-agentive*). Given the usual conceptions of agency, an agent will be either animate or what we call *anim_proxy*. An inanimate or propositional stimulus cannot be considered an agent. A verb that is used with an animate stimulus (comparatively) often can be suspected to have an agentive reading, which may be lacking in a verb that is hardly ever used with animate stimuli at all.

The stimulus types we distinguish are *anim* (animate being), *anim_proxy* (entities like institutions or organisations that basically act as if they were animate), *inanim* (inanimate beings including many abstract entities), and *propositional* (propositions in a broader sense that may include events, situations and the like, very often, these are syntactically clausal), cf. Section 3.1 for the details.

Animacy is of course also interesting in its own right, e.g. because it is often argued to influence word order in German (cf. Ellsiepen & Bader, 2018).

I.VI Stimulus PPs

In some cases, something that (naively) could be described as a (part of the) stimulus is expressed in a PP. This PP may be used instead of an NP/CP stimulus (e.g. in the (stative) passive (29)–(30), or in the reflexive construction (31)–(33)), or it may be present alongside it as in (34)–(36). In the latter case, this is occasionally referred to as a “split stimulus” in the literature (cf. Engelberg, 2015).

- (29) Der Verheiratete verliebt sich in eine junge Frau und **wird** von
 the married.NOM falls.in.love REFL in a young woman and becomes by
 Gewissensbissen **gequält**.
 scruples tormented (NZZ_1995_03_28_a125_seg5_s3)
 The married one falls in love with a young woman and is tormented by
 scruples.
- (30) Die Athener Regierung **ist** über die Entwicklungen
 the Athenian government is about the developments
 in Bosnien-Herzegowina **beunruhigt**.
 in Bosnia-Herzegovina concerned (NZZ_1993_08_09_a5_seg5_s1)
 The Athens government is concerned about the developments in Bosnia and
 Herzegovina.
- (31) Ich **ärgere** mich masslos über solches Verhalten.
 I annoy REFL beyond.measure about such behaviour
 (NZZ_1998_11_09_a114_seg12_s3)
 I am extremely annoyed by this kind of behaviour.
- (32) Tagelang **habe** sie sich um ihren Mann **geängstigt**.
 for.days has.SBJV she REFL about her.ACC man.ACC worried
 (NZZ_1999_06_16_a71_seg5_s7)
 She worried about her husband for days.
- (33) Tagelang **habe** sie sich vor ihrem Mann **geängstigt**.
 for.days has.SBJV she REFL of her.DAT man.DAT worried
 She was afraid of her husband for days.
- (34) Am Englischen **fasziniert** uns die vergleichsweise grosse Zahl
 at.the English.DAT fascinates us the comparatively large number
 einsilbiger Wörter.
 monosyllabic.GEN words.GEN (NZZ_1993_02_26_a67_seg2_s11)
 What fascinates us about the English language is the comparatively large
 number of monosyllabic words.
- (35) Angie **fasziniert** ihn durch ihre Ausstrahlung und ihren phantasievollen,
 Angie fascinates him.ACC by her charisma and her imaginative
 unregulierten Lebensstil.
 unregulated lifestyle (NZZ_1994_02_11_a189_seg1_s48)
 Angie fascinates him with her charisma and her imaginative, unregulated way
 of living.

(36) Roberto Calasso **hat** mit seinem Wissen sogar ausgepichte
 Roberto Calasso has with his knowledge even cunning
 Altphilologen **verblüfft**.
 classical.philologists.ACC baffled. (NZZ_1997_11_22_a136_seg3_s14)
 With his knowledge, Roberto Calasso baffled even cunning classical
 philologists.

With no doubt, the examples above illustrate very different phenomena. However, their common feature (besides the presence of a stimulus PP) is that they are not well understood. Are there differences among the verbs and syntactic patterns with respect to the prepositions used? Is the PP on the reflexive pattern an argument (as e.g. Rott et al., 2020 assume) or an adjunct? If the former is the case: Is the preposition governed (as Bejan, 2002 assumes)?⁸ Can the “stimulus” reading of the preposition be reduced to another, better-understood reading (as e.g. one of those listed in (Kiss et al., 2020), cf. Masloch 2021 on *über*)? Is it really sensible to think of one stimulus that is split into two constituents? Annotating the presence of stimulus PPs will lead to data that can be inspected to answer these questions.

A phenomenon that seems to be closely related to stimulus PPs is what we – for lack of a better term – call *other stimulus adjuncts*: Stimulus clauses that appear on patterns where more frequently, a PP is used to indicate the stimulus.

(37) Man **wundert** sich, wo sie ein Auskommen finden.
 one wonders REFL where they a livelihood find
 (NZZ_1995_09_26_a151_seg3_s7)
 One wonders how they make a livelihood.

It may well be that in fact a stimulus PP *is* used in examples like (37). It has been argued in the literature that sentences like this one contain an empty pronominal adverb (cf. Gunkel & Hartmann, 2020 and the literature cited therein). Still, since there is no overt preposition, we cannot annotate its form and use a different category to capture the phenomenon.

⁸ One may note the contrast in meaning between (32) and (33), which could be interpreted as a counterargument against this hypothesis since it illustrates that prepositions may alternate paradigmatically.

II. Data Generation and Annotation Guidelines

The basis of our annotation study are randomly extracted sentences from a NZZ (Neue Zürcher Zeitung) corpus (NZZ-Korpus 1993–1999) by Keßelmeier et al. (2009), a newspaper corpus based on the published version of the NZZ corpus (years: 1993–1999) under the license of the NZZ Mediengruppe. The NZZ is a newspaper from Zurich written in (the Swiss variety of) Standard German. We chose 64 German EO-verbs based on previous experimental and corpus studies (among others: Engelberg, 2018; Hirsch, 2018; Rääts, 2011; Temme & Verhoeven, 2017). For a list of these verbs, see Section 6. To be included, the verb should be grammatically possible within a transitive EO-construction. We operationalised this by including verbs that are cited frequently as EO-verbs in relevant publications or that are clearly possible in such a construction by the intuition of all three (German native speaker) annotators. Semantically, the verb should display psych-predicate properties by clearly denoting an emotional or mental state or event. Both aspects are commonly referred to as distinctive features of psych EO-verbs in the literature (cf. Landau, 2010, *inter alia*). Further constraints on the dataset were imposed by balancing on overall frequency, case preference (accusative or dative), and perfect tense auxiliary selection preference (*haben* or *sein*), as well as morphological variety (by inclusion of prefix, suffix, and particle verbs. We also tried to include different verbs based on the same root – e.g. *wundern* (to wonder) and *verwundern* (to astonish) – since they have been argued to differ systematically (Hirsch, 2018)). For each of the candidate verbs, up to 200 samples were randomly extracted from the NZZ corpus. Roughly one third of these 64 verbs did not yield complete samples of 200 sentences due to their low corpus frequencies (cf. Section 6). The samples were divided among three native speakers of German with a background in linguistics and annotated by them.

The annotation scheme was developed in several steps, alluding to the MATTER-method established by Pustejovsky & Stubbs (2013) for annotation projects based on natural language data. After an initial version was sketched based on what we expected to find on the basis of the literature, a first annotation stage was performed, which consisted of several steps. Annotators started annotating their samples, and when they encountered problems or unexpected phenomena, these were discussed and either the relevant definition in the guidelines was clarified or a new category or comment was added. Prior annotations were modified accordingly. Phenomena we did not expect beforehand include 2.13 *EXP_V_refl_Gen-STM*, 3.4 *Other stimulus adjunct*, and 4.1.4.5 *EXP-related_object*. Because many of the surprising phenomena are

verb-dependent and annotation was performed one verb after the other, modifications were necessary until the very end.

After the first annotation stage was completed, each of the samples was revised by at least one further annotator in a subsequent adjudication state to decide on problematic cases and to search for residual annotations reflecting an earlier version of the annotation scheme. We did not consider a classic inter-annotator agreement calculation fruitful here, but verified every annotation by at least a simple majority decision among the annotators. This resulted in a dataset with a total of 10,290 annotated examples.

In praxis, annotations were performed in spreadsheets: one spreadsheet per verb, examples in rows, categories in columns. For ease of usage, the syntactic pattern was represented in a wide format (each column represents a pattern, and only one of them is marked with an *x* for each example) while we used a narrower format for the other categories, where the observed value had to be filled in (e.g. *mit* for *Stimulus_PP*), or which had only two possible values from the beginning (like *Control*, *other stimulus adjunct*). In the latter case, we also used *x* or left the cell blank. The column names were: *NZZ_ID*, *Token_ID*, *Sentence*, *Sentence_CoNLL*, *not_of_interest*, *non-psych*, *X-STM_V_Y-EXP*, *X-STM_V*, *sein_V-PII*, *werden_V-PII*, *X_lassen_refl_V*, *X_V_refl*, *refl_V-PII_zeigen*, *NoAux_V-PII*, *Acc/Dat-EXP_V*, *wirken/scheinen_V-PII*, *X-CAUS_V_Y-EXP_PP*, *Nom-EXP_V*, *EXP_V_refl_Gen-STM*, *sein_zu-Inf*, *tough*, *Stimulus_Type*, *Stimulus_PP*, *Control*, *Other_stimulus_adjunct*, *Comment*, *Misc*. The first four of these were already present prior to manual annotation. Additional information on the information style for each category can be found in its description below. *Sentence_CoNLL* contains grammatical information on the sentence presented in CoNLL-U format, i.e. one word per line, properties separated by whitespace. The properties: word ID, word, lemma, universal part-of-speech tag, STTS tag, morphological features, ID of syntactic head, dependency relation between the word and its head (Universal Dependencies, cf. (de Marneffe et al., 2021)). *Sentence_CoNLL* was automatically generated with Stanza 1.2.3 (Qi et al., 2020) using the default models for German, which were trained on the gsd corpus (McDonald et al., 2013).

The remaining part of this document contains the actual annotation guidelines. The way the categories are listed mirrors their order of appearance in the annotation spreadsheets. The comments are grouped by the element of the sentence they relate to. This grouping's only purpose is to facilitate look-up, it does not have any further significance. A list of the verbs annotated, the case of their experiencer NP, and their sample size can be found in Section 6.

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1 General

1.1 not_of_interest

In some cases, it is not sensible or even possible to annotate an example. This is the case with (incorrectly tagged) non-verbal occurrences, fragmentary or duplicate sentences, bare infinitives, or ungrammatical clauses, among others. Usually, an explanatory comment is required, cf. 4.1. If no comment applies, use 4.2 *Misc* to specify why the example should be excluded from further consideration. Fragmentary or ungrammatical examples that *can* be annotated *should* be annotated. If you are able to determine the pattern and (if required) the stimulus type, you should annotate the example in the usual way and refrain from using *not_of_interest*. Be aware of the pattern 2.8 *NoAux_V-PII*, which is annotated although one might consider these occurrences non-verbal, as disputed in the literature.

not_of_interest + comment fragment

- (38)) Monica, zwei weitere, durchaus sympathische Männer zu **faszinieren**.
Monica two additional quite likeable men to fascinate
(NZZ_1995_03_31_a143_seg3_s7)

fragment but not not_of_interest

- (39) wird sich der heutige Leser halb **amüsiert**, halb wehmütig denken und
will REFL the contemporary reader half amused half wistful think and
erstaunt auf das kurze Wort " soll " starren [...].
astonished at the short word shall stare
(NZZ_1996_05_25_a247_seg9_s7)
today's reader will think to themselves half amused and half wistful, and stare
at the short word "shall" in astonishment.

1.2 non-psych

Landau (2010, p. 137) defines: "A psych verb is any verb that carries psychological entailments with respect to one of its arguments (the experiencer)". Some verbs like e.g. *bewegen* (to move), *zusetzen* (to nag but also to add) or *guttun* (to benefit, to do sb. good), however, carry psychological entailments only in some of the examples. While one

might want to speak of homonymy in the case of *zusetzen*, one will be willing to assume polysemy or even postulate only one reading that is vague with regard to the psych/non-psych distinction in other cases – note that it is possible to coordinate both readings of *guttun* in (40) without a zeugma effect. Examples in which the verb does not have a psych entailment are marked as *non-psych*. Note the existence of comment 4.1.2.2 *psych_ambiguous*, which is used if the sentence entails both a possible psych and non-psych reading. Non-psych examples are combined with an annotation of the syntactic patterns like psych examples and a “psych ambiguous” comment may also be used.

(40) Über 4500 Arbeiter haben [...] 35 Millionen Kubikmeter Erde **bewegt**.
 over 4500 workers have 35 million cubic metres earth moved
 (NZZ_1993_03_31_a38_seg10_s3)
 Over 4500 workers moved 35 million cubic metres of earth.

(41) [...] Zu einheimischem Traubenmost [...] darf reine Saccharose [...] **zusetzt**
 To domestic grape.must.DAT may pure saccharose added
 werden.
 become. (NZZ_1993_05_22_a70_seg16_s1)
 It is allowed to add pure saccharose to domestic grape must.

perhaps more controversial: sich gefallen lassen (to put up with)

(42) Die Beamten liessen sich das sogar eine kurze Zeit **gefallen** [...]
 the officials let REFL this even a short time please
 The officials even put up with it for a while.

regular annotation + comment *psych_ambiguous*

The comment is not obligatory due to the coordinative construction but because there is a non-psych reading even with the animate object.

(43) Etwas längere Pausen zwischen den Stücken hätten zudem den
 slightly longer breaks between the pieces have.SBJV moreover the
 Hörerinnen und Hörern sowie den Werken **gutgetan** [...]
 listeners.F and listeners as.well.as the works benefitted
 (NZZ_1995_05_16_a153_seg2_s12)
 Slightly longer pauses between the pieces would have benefitted the listeners as well as the works.

2 Syntactic Patterns

For ease of annotation, each pattern gets its own column so that it can be marked by an *x*. We do not distinguish between finite and infinite forms, except for patterns with PII⁹. Consequently, EO verbs embedded under raising predicates are not distinguished from corresponding inflected forms, since the original argument structure of the EO verb is not affected by the embedding. However, (adjunct) control is commented separately (cf. 3.3).

2.1 X-STM_V_Y-EXP

The transitive pattern: Stimulus subject, experiencer object.

- (44) Die Aura der Stararchitekten **bezaubert** neuerdings die Welt.
the aura the.GEN star.architects.GEN charms recently the world
(NZZ_1995_11_28_a97_seg3_s1)
The aura of star architects recently charms the whole world.

The same pattern is annotated if the order of complements is reversed (i.e. Y-EXP realized before X-STM).

- (45) Ihr **behagen** schwierige Strecken wie in Altenmarkt.
her.DAT please difficult.NOM routes.NOM like in Altenmarkt
(NZZ_1994_01_10_a105_seg6_s17)
She is comfortable with difficult routes like the one in Altenmarkt.

PP (also annotate PP, cf. 3.2):

- (46) Sein Nachfolger Clement hingegen **verschreckt** Politiker wie
his successor Clement however scares politicians.ACC as.well.as
Bürger **durch seine Forschheit**.
citizens.ACC through his brashness (NZZ_1999_03_06_a8_seg6_s4)
His successor Clement, however, scares off politicians and citizens alike with
his brashness.

⁹ *participle II*. "Partizip II" is the German name for this kind of participle. We use a translation of it because it is more accurate than terms like *past participle* or *perfect participle* since it does not make reference to a specific function of the form (it is e.g. questionable whether a participle II in an adjunct participle clause has to be considered passive).

2.2 X-STM_V

The intransitive pattern: There is a stimulus subject without an experiencer object. Although the experiencer is not realised syntactically, they can be considered present semantically.

- (47) Die musikalischen Leistungen **imponierten** fast durchweg.
the.NOM musical.NOM performances.NOM impressed almost throughout
(NZZ_1994_08_24_a85_seg3_s10)
The musical performances impressed almost without exception/the entire time.

PP (also annotate PP, cf. 3.2):

- (48) Es sind Steine, Blumen, Muscheln, Figuren,
It are stones.NOM flowers.NOM mussels.NOM figures.NOM
Erinnerungsbilder von Reisen, die ihre Sprache sprechen und **mit**
souvenir.pictures.NOM from journeys that their language speak and with
ihren Formen bezaubern.
their shapes enchant (NZZ_1993_08_14_a126_seg2_s139)
Stones, flowers, mussels, figurines, and souvenir pictures from journeys speak
their language and enchant with their shapes. / These are stones, flowers,
mussels, figurines, and souvenir pictures from journeys, which speak their own
language and enchant with their shapes.

2.3 sein_V-P II

The stative/adjectival passive (*Zustandspassiv*) formed with *sein* (to be) and the PII, with or without additional PP (in latter cases, also annotate PP, cf. 3.2). Its exact analysis for EO-verbs is disputed in the literature (cf. Möller, 2015). This pattern is reserved for the stative passive and should not be used with the perfect past of verbs like *nahegehen* (to affect emotionally) that use *sein* as their perfect auxiliary.

- (49) Auch Staehelin ist deprimiert.
also Staehelin is depressed
(NZZ_1996_11_04_a18_seg8_s5)
Staehelin is also depressed.

(AUX) ellipsis possible (+ comment *ellipsis*, cf. 4.1.1.7):

- (50) Die Epigonen Duchamps sind noch immer fleissig,
the epigones.NOM Duchamp.GEN are still ever industrious
Museen und Handel **begeistert**.
museums.NOM and trade.NOM excited (NZZ_1993_01_06_a41_seg2_s7)
Duchamp's epigones are still busy, museums and trade are excited.

PP (also annotate PP, cf.3.2)

- (51) Als eher konservativer Bürger, dessen Familie nachweislich seit dem frühen
as rather conservative citizen whose family demonstrably since the early
Mittelalter im schweizerischen Raum heimatberechtigt ist, bin ich
middle.ages in.the Swiss area having.communal.civil.rights is am I
von dieser neuen Welle schockiert.
by this new wave shocked (NZZ_1993_04_23_a50_seg2_s3)
As a rather conservative citizen whose family has demonstrably been domiciled
in the Swiss area since the early Middle Ages, I am shocked by this new wave.

- (52) In Washington wird [...] vermutet, dass Präsident Asad **über die von der**
in Washington becomes suspected that President Asad about the by the
PLO- Führung [...] eingefädelte Autonomievereinbarung mit Israel tief
PLO-leadership.DAT threaded autonomy.agreement with Israel deeply
verärgert ist.
upset is (NZZ_1993_09_09_a30_seg8_s4)
People in Washington suspect that President Asad is deeply upset about the
autonomy agreement with Israel that the PLO leaders arranged.

not *sein_V-PII* but past perfect (Plusquamperfekt):

- (53) Die edle Traurigkeit, die von Ruinenstädten ausgeht, und der Untergang
the noble sadness that from ruined.cities emanates and the decline
der Antike überhaupt **waren** den grossen Geistern jener
the.GEN antiquity generally were the.DAT great.DAT minds.DAT that.GEN
Zeit **nahegegangen**.
time.GEN affect.deeply (NZZ_1998_05_30_a252_seg9_s5)
The noble sadness that emanates from ruined cities and the decline of antiquity
in general affected the great minds of that period deeply.

2.4 werden_V-PII

This is the canonical German verbal passive (*Vorgangspassiv*), including the impersonal passive. Some apparent instances of this construction have to be analysed as copula + adjective (cf. also Möller, 2015). If the PII is definitively an adjective in an example, it

is marked as 1.1 *not_of_interest*. In ambiguous cases, the comment 4.1.1.4 *ambiguous* is used.

- (54) Russland [...] dürfe unter keinen Umständen verärgert werden.
Russia may.SBJV under no circumstances angered become
(NZZ_1995_05_30_a9_seg4_s5)
Russia must not be angered under any circumstances.

impersonal passive:

- (55) 28 Erstaunlich, wie da pustend verwirrt wurde.
28 astonishing how there blowing confused became
(NZZ_1997_12_06_a248_seg4_s21)
Astonishing, how (someone) managed to confuse (someone) by/while blowing.

copula + adjective:

- (56) Sie geht ins Altersheim, wird geistig verwirrt, die Kinder
she goes into.the retirement.home becomes mentally confused the children
holen sie zurück, sie kommt ins Spital und stirbt.
fetch her back she comes into.the hospital and dies
(NZZ_1993_09_20_a225_seg3_s2)
She moves to a retirement home, becomes mentally confused, her children
bring her back, she is admitted to the hospital and dies.

PP (also annotate PP, cf. 3.2):

- (57) Der [...] Reisende wird von einem süßlichen Geruch in der Luft verwirrt.
the traveller becomes by a sweetish smell in the air confused
(NZZ_1997_10_01_a20_seg10_s1)
The traveller is confused by a sweetish smell in the air.

2.5 X_lassen_refl_V

In this pattern, the verb cooccurs with a reflexive embedded under *lassen* (*let*). For a discussion of the construction, cf. (Kunze, 1997; Pitteroff, 2014). We do not distinguish e.g. between the personal and the impersonal form (although a comment in 4.2 *Misc* is advisory in the case of the impersonal variant) or between lexicalised and more productive forms of usage (but cf. 4.1.1.11 *collocation* and 4.1.1.10 *idiomatic*).

- (58) Gogo lässt sich nicht entmutigen.
Gogo lets REFL not discourage (NZZ_1994_01_08_a194_seg3_s24)
Gogo does not get discouraged.

impersonal variant:

- (59) 52 Mit ihnen **lässt sich** trefflich **imponieren**.
52 with the lets REFL splendidly impress
(NZZ_1994_10_01_a212_seg17_s32)
52 One can splendidly use them to impress.

PP (also annotate PP, cf. 3.2):

- (60) [...] "Eigentlich ungewöhnlich, wie **sich** der Mensch **von diesen Blechtrotteln**
[...] actually unusual how REFL the human by this tin.moron
faszinieren lässt."
fascinate lets (NZZ_1994_05_27_a204_seg4_s3)
Actually, it's quite unusual how people allow themselves to get fascinated by
these tin morons.

2.6 X_V_refl

This is the reflexive construction. It can be distinguished from instances of the transitive pattern, 2.1 X-STM_V_Y-EXP, containing an anaphoric reflexive pronoun with the usual tests. In concrete terms, we use the following ones as presented in (Kunze, 1997):

1. Is it possible to replace the reflexive pronoun with an interrogative one or to coordinate it with a referential NP?
2. Can the reflexive pronoun appear in the vorfeld¹⁰? (related to 1)
3. Is it possible to modify the reflexive using *selbst/selber*? (related to 1)
4. Is it possible to negate the reflexive? (related to 1)
5. Is it possible to replace the reflexive with a referential NP without a change in verb meaning?
6. Is it possible to replace the reflexive with a referential NP without consequences for the overall argument structure of the verb?

In the case of an anaphoric reflexive pronoun, all of the above questions will be answered affirmatively, though coordination with a referential NP may not be possible in the case of reciprocal pronouns.

If both readings are possible, one should annotate the more prominent one (which will usually be X_V_refl) and comment 4.1.1.4 *ambiguous*.

¹⁰ German is a V2 language, i.e. in a canonical sentence the finite verb is located in the second position, following an arbitrary constituent. In traditional terminology the area in front of the verb is called Vorfeld (prefield).

unproblematic standard case: unambiguously X_V_refl

- (61) Wenn zwei sich streiten, **freut sich** die Nachwelt.
when two REFL quarrel rejoices REFL the posterity
(NZZ_1994_06_08_a113_seg4_s1)
When two people quarrel, posterity rejoices.

not X_V_refl but X-STM_V_Y-EXP (+ comment 4.1.4.7 reciprocal):

- (62) Es sind Pelzrobben, die andere Pelzrobben auf dem schmalen Strand
it are fur.seals.NOM who other fur.seals.ACC on the narrow beach
herumjagen, **sich gegenseitig imponieren**, spielen.
chase.around REFL mutually impress play
(NZZ_1995_01_28_a218_seg3_s27)
They are fur seals, who chase other fur seals around on the narrow beach, who
impress each other, who play.

ambiguous example, comment ambiguous (X_V_refl reading more prominent)

- (63) Man [...] weiss, dass **sie sich langweilen und quälen** [...].
one knows that they REFL bore and torture
(NZZ_1999_09_14_a128_seg3_s14)
One knows that they are bored and struggling. / One knows that they are bored
and that they torture. / One knows that they bore and torment each other.

Some verbs will have an utterance reading when used reflexively if a (direct or indirect) quotation is present. Use the comment 4.1.2.3 *utterance_reading* in this case.

- (64) " **Ich riskierte etwas zu viel** ", ärgerte er **sich**.
I risk a.little too much annoyed he REFL
(NZZ_1994_08_29_a114_seg2_s6)
"I risked a little too much", he said annoyed.

Oftentimes, the stimulus is expressed by means of a PP or an *Other_stimulus_adjunct* (cf. 3.4) with this pattern.

PP (also annotate PP, cf. 3.2):

- (65) Man **amüsiert sich über Tinguelys Sinn für Satire und Ironie**.
one amuses REFL about Tinguely.GEN sense for satire and irony
(NZZ_1995_08_15_a122_seg6_s3)
One is amused by Tinguely's sense of satire and irony.

Other_stimulus_adjunct (cf. 3.4):

- (66) 23.00 Ich freue mich, dass du geboren bist.
23.00 I am.glad REFL that you born are
(NZZ_1994_12_16_a188_seg29_s25)
23.00 I am glad you were born.

2.7 refl_V-PII_zeigen

Verb and reflexive embedded under *zeigen* (to show). Also includes comparable cases with *fühlen* (to feel), *erklären* (to declare), *sehen* (to see) etc. which are not listed separately. One might consider this pattern related to 2.3 *sein_V-PII* in a copula analysis (cf. Möller, 2015).

- (67) Nach zwei Monaten habe ich Zweifel und fühle mich deprimiert.
After two months have I doubts and feel REFL depressed
(NZZ_1993_04_30_a72_seg4_s6)
After two months, I have doubts and feel depressed.

PP (also annotate PP, cf. 3.2):

- (68) Sie selbst zeigten sich "schockiert" über die politischen Sitten
they themselves showed REFL shocked about the political customs
im Lande.
in.the country (NZZ_1994_03_31_a32_seg5_s6)
They themselves appeared "shocked" by the political mores in the country.

2.8 NoAux_V-PII

Sometimes a PII is used as a depictive/adverbial. It may form a (sometimes considerably long) participle clause. These occurrences are not verbal *per se* but e.g. differences among verbs regarding their distribution or the stimulus prepositions they come along with may nevertheless be interesting for an analysis of the verbs.¹¹ Although some analyses assume a silent element in cases like these and Fischer and Høyem (2017) take it to be PRO, we do not annotate 3.3 *Control*.

¹¹ The same holds for 2.3 *sein_V-PII*.

(69) Der exzentrische Mr. Enderby ist sichtlich **verängstigt** vor ihren
 the eccentric Mr Enderby is visibly frightened in front of their/her
 Augen tot zusammengebrochen.
 eyes dead collapsed (NZZ_1999_01_04_a140_seg17_s3)
 Visibly frightened, the eccentric Mr Enderby collapsed dead under their very
 eyes.

PP (also annotate PP, cf. 3.2):

(70) Nach dem Abzug der Sowjets nahm er seine religiösen Studien
 after the withdrawal the GEN Soviets GEN took he his religious studies
 wieder auf, brach sie jedoch ab, als er, **angeekelt von den**
 again up abandoned them however PRT when he disgusted by the
Machtkämpfen zwischen den afghanischen Milizen, 1994 wieder zu
 struggles for power DAT between the Afghan militias 1994 again to
 den Waffen griff [...].
 the weapons grabbed (NZZ_1997_03_15_a22_seg8_s10)
 After the Soviets left, he resumed his religious studies, but abandoned them
 when, disgusted by the infighting between Afghan militias, he took up arms
 again in 1994.

2.9 Acc/Dat-EXP_V

There is a dative/accusative experiencer but no (phoric) subject. A non-phoric *es* (3rd person singular neuter pronoun) is ignored (but comment 4.1.5 *non-phoric_es*). We also take the *es* in examples like (71) to be non-phoric.

non-phoric_es:

(71) Dort **gefiel es ihr** nicht [...]
 there liked it her.DAT not
 (NZZ_1993_04_29_a117_seg1_s7)
 She did not like it there.

PP (also annotate PP, cf. 3.2):

- (72) Die «Nachtbücher» des Alfred Kantorowicz sind vor allem seine
the night.books the.GEN Alfred Kantorowicz are above all his
papierene «Klagemauer», vor deren «Subjektivismus» und «leichtfertig
paper Wailing.Wall before whose subjectivism and inconsiderately
formulierten Affekten» **ihn** manchmal **ekelt** [...].
formulated affects him.ACC sometimes disgusts
(NZZ_1996_04_20_a224_seg3_s11)
Alfred Kantorowicz's "night books" are above all his paper "Wailing Wall",
whose "subjectivism" and "inconsiderately formulated affects" disgust him
sometimes.

2.10 wirken/scheinen_V-PII

PII embedded under a verb like *wirken* (to appear) *scheinen* (seem) or *klingen* (to sound). The category is not restricted to the verbs listed here, similar to *refl_V-PII_zeigen*. There might be a close relation to (copula-analysed) 2.3 *sein_V-PII* but we will keep them separate during the annotation.

- (73) Der [...] Sänger Roger Daltrey dagegen **wirkt** etwas **gelangweilt** [...].
the singer Roger Daltrey in.contrast appears a.bit bored
(NZZ_1997_05_20_a141_seg3_s15)
The singer Roger Daltrey, in contrast, seems a bit bored.

2.11 X-CAUS_V_Y-EXP_PP

The subject causes the object experiencer to be in a certain emotional state (depending on the verb) regarding some object of emotion which is given as a PP.

- (74) 1665 hatte Kara Mehmet Pascha die Wiener Oberschichten für das
1665 had Kara Mehmed Pasha the Viennese upper.classes.ACC for the
"schwarze Wasser " **begeistert**.
black water enthused. (NZZ_1993_07_28_a81_seg7_s16)
In 1665, Kara Mehmed Pasha made the Viennese upper classes get excited
about the "black water".

2.12 Nom-EXP_V

The experiencer is the subject of the intransitive verb, which follows the strong conjugation paradigm. According to Hirsch (2018 chapter 4.2), these verbs take part in the causative alternation, and this is the anticausative form.

(75) Ich **erschrak** etwas, machte mich dann aber bald an die Arbeit.

I startled a.bit made REFL then but soon to the work

(NZZ_1996_12_07_a218_seg3_s7)

I was a little startled, but soon got down to work.

2.13 EXP_V_refl_Gen-STM

Reflexive verb with a nominative experiencer and an additional genitive stimulus.

(76) Nicht umsonst **erfreut sich** Graf v. Krockow in Polen **grossen Ansehens**.

not for.nothing enjoys REFL Count v. Krockow in Poland great renown.GEN

It is not for nothing that Count von Krockow enjoys great renown in Poland.

2.14 sein_zu-Inf

Modal infinitive with *sein* (to be). Modal infinitives with *haben* (have) are treated just like any other instance of raising, but this is not possible with the *sein*-variant.

(77) Die Kriminellen **seien** mit solch einer "Farce" nicht **zu erschrecken**.

the criminals are.SBJV with such a.DAT farce.DAT not to frighten

(NZZ_1998_03_07_a9_seg6_s3)

It is impossible to frighten criminals with such a "farce". / The criminals are not to be frightened with such a "farce".

2.15 tough

This is the *tough*-construction as exemplified in (78). Haider (2010, chapter 7.4) argues that the German *tough*-construction is an instance of 2.14 *sein_zu-Inf* (and thus works differently from *tough*-movement in English), but we will treat them separately during the annotation.

(78) Die russische Gesellschaft dürfte nicht **leicht** wieder **einzuschüchtern sein**.

the Russian society might not easy again to.intimidate be

(NZZ_1994_01_29_a113_seg23_s13)

It won't be easy to intimidate Russian society again.

3 Additional Categories

3.1 Stimulus_Type

We distinguish three broad classes of stimuli (two of which are semantic, the third one is half semantic, half syntactic): animate, inanimate, and propositional/clausal. However, the overall distribution of observed stimuli called for a more fine-grained classification, resulting in six possible values for this feature. Since we consider “agentivity” not a feature of certain stimuli, but of constructions or certain contexts, we refrained from a stimulus-based annotation in terms of “agentivity” or “volitionality” and preferred a semantically more profound classification based on animacy. We annotate the stimulus type only for patterns with an NP/CP stimulus, i.e. 2.1 X-STM_V_Y-EXP, 2.2 X-STM_V, and 2.11 X-CAUS_V_Y-EXP_PP. In all other cases, the cell is left empty. If the stimulus is realised syntactically as a pronoun, its antecedent is treated as the stimulus. Of course, it may be the case that the antecedent is not realised in the given sentence and the stimulus type cannot be determined. In this case, we annotate cf. 3.1.5 *ambiguous*. Quantifiers may come with restrictions that make it possible to choose a specific stimulus type. Annotate 3.1.5 *ambiguous* if not.

3.1.1 anim

The stimulus is animate. Generally speaking, everything that is alive from a biological point of view is considered animate for our purposes.¹² Additionally, things like ghosts, dead people, gods count as animate if it is clear from the context that they are taken to share some features that are typical of animate beings in the strict sense (such as volitionality, the ability to make plans etc.). For complex (social) entities that may behave like atomic animate beings, cf. 3.1.2 *anim_proxy*. Note the existence of comment 4.1.3.6 *clearly_non-agentive*, which is used with stimuli that are animate but definitely not agentive, which might apply to plants, single-cell organisms etc. If the stimulus

¹² This criterion has the advantage of being (comparatively) clear-cut. It also seems like a reasonable default choice: It might well be that different concepts of animacy are relevant in different areas of grammar/semantics. At least since Jespersen (1924, p. 237), the distinction between *wer* (*who*) and *was* (*what*) is cited as a grammatical reflex of animacy. But it is perfectly possible that the kind of animacy relevant there is different from the one that interests us when we look at the kinds of stimuli a verb can take. There is e.g. – as Krifka (2009) points out – an observation dating back to Paul (1917) that inanimate masculine nouns belonging to the weak declension class show a nominative-accusative case syncretism while animate ones do not. Krifka (2009, p. 148) attributes to Gustav Wurzel the observation that fish behave as if they were inanimate. One may note that (at least on my judgement) one can use *wer* in their case: *Wer schwimmt denn da im Teich? Ein Karpfen.* (*Who’s swimming in the pond? A carp.*) This means that it cannot be the same concept of animacy that is relevant in both cases. Though note that one may also doubt the generalisation based on counterexamples like *Automat* (*vending machine, automaton*).

argument is realised as a pronoun, use *anim* only if it is clear from the context that its referent must be animate.

- (79) Liberale Abgeordnete befürchten, dass **Bishop** Wähler
liberal representatives fear that Bishop.NOM voters.ACC
einschüchtert [...].
intimidates (NZZ_1994_03_31_a7_seg8_s6)
Liberal MPs fear that Bishop intimidates / will intimidate voters.

demons are animate:

- (80) [...] in der Kirche findet sie keinen Trost, weil **die Dämonen** sie
in the church finds she no comfort because the demons.NOM her.ACC
peinigen.
torment (NZZ_1996_12_28_a155_seg10_s5)
She does not find comfort in church because the demons torment her.

antecedent of pronoun animate:

- (81) Und **ihre** Politiker, **die** widern mich **an!**
and their/her politicians they disgust me.ACC PRT
(NZZ_1998_03_10_a23_seg6_s6)
As for their/her politicians, they disgust me!

***anim* but 4.1.3.6 clearly_non-agentive:**

- (82) **Die zu den Schraubenbakterien zählenden Borrelien verwirren** die
the to the Spirochaetes belonging Borrelia confuse the
Mediziner seit Jahrhunderten mit einem Spektrum von sehr
physicians.ACC for centuries with a spectrum.DAT of very
unterschiedlichen Krankheitsformen.
different forms.of.disease (NZZ_1998_10_07_a196_seg4_s1)
Borrelia, which belong to the spirochete phylum, have been confusing
physicians for centuries with a spectrum of very different forms of disease.

3.1.2 anim_proxy

The stimulus is not strictly speaking animate, but it is a (complex social) entity that is rooted in animate or sentient beings and in certain (relevant) respects acts like an animated agent. Typical examples include institutions, organisations, nations etc. If it is not clear whether the stimulus is *anim* or *anim_proxy*, annotate *anim*.

(83) **Deutsche Fernsehanstalten** hätten durch falsche Berichterstattung die German television.networks have.SBJV through false reporting the Touristen **eingeschüchtert**. tourists.ACC intimidated (NZZ_1994_07_28_a26_seg10_s5)
German television networks (would) have intimidated the tourists through false reporting.

most probably a sports team

(84) Während [...] **St. Gallen** die Fans **entzückte** [...] While St. Gallen the fans.ACC delighted [...] (NZZ_1997_07_14_a132_seg3_s18)
While St. Gallen delighted the fans [...]

anim* because *der Weltmeister* could be *anim* as well as *anim_proxy

(85) **Der Weltmeister** siegt und **langweilt**. the world.champion wins and bores (NZZ_1995_07_12_a146_seg7_s9)
The world champion wins and bores.

Some more problematic cases regarding the distinction between 3.1.2 *anim_proxy*, 4.1.4.1 *clearly_non-agentive*, and 3.1.1 *anim*:

metonymic_STM

(86) **Die Aufführung** tat zwar alles, um die Erinnerung the performance.NOM did though everything in.order.to the remembrance.ACC an die ursprüngliche Filmmusik nicht vergessen zu machen, aber **sie** at the original soundtrack.ACC not forgotten to make but she imponierte auf ihre Weise. impressed on her way (NZZ_1994_04_26_a116_seg4_s19)
Although the performance did everything to keep the memory of the original soundtrack alive, it was impressive in its own way.

inanim. Cities, countries, etc. are hard to annotate: Think about the meaning in each individual case.

(87) **Paris** behagte ihm, bevor er 1977 dessen Bürgermeister wurde, nicht. Paris pleased him.DAT before he 1977 its mayor became not (NZZ_1995_05_08_a9_seg3_s2)
He did not like Paris before he became its mayor in 1977. / He did not feel comfortable in Paris before he became its mayor in 1977.

3.1.3 inanim

The stimulus is inanimate. NPs that may be taken to have a propositional reading also fall into this category. If the stimulus is realised as an NP headed by a propositional content noun (cf. 4.1.3.5 *propositional content noun*), *inanim* is used and a comment is obligatory irrespective of the presence of an embedded clause within the NP (cf. Section 4.1.3.5).

(88) Daniel Vischer [...] **bekümmert das Schicksal der Swissair.**
Daniel Vischer.ACC troubles the.NOM fate.NOM the.GEN Swissair.GEN
(NZZ_1997_04_22_a138_seg11_s11)
Swissair's fate troubles Daniel Vischer.

(89) **Der dauernde Sprachwechsel amüsiert sie [...].**
the constant change.of.language amuses her/them.ACC
(NZZ_1994_11_24_a165_seg10_s8)
The constant shift in language amuses her/them.

More controversial example, refers to an abstract kind of person that B. exemplifies

(90) An Berlusconi imponiert ihnen **der Macher-typ [...].**
At Berlusconi.DAT impresses them the doer-type
(NZZ_1995_01_30_a14_seg10_s4)
What impresses them about Berlusconi is that he is the kind of person that gets things done.

also controversial: Dead people are not animate (in this example, the shock does not refer to corpses per se but the fact that someone died)

(91) **Erste Todesopfer** schockieren.
first victims.of.death shock
(NZZ_1996_01_11_a127_seg3_s5)
First fatalities shock.

+comment PCN+C (cf. 4.1.3.5):

(92) Ganz besonders schien Ruzkoi **die Tatsache zu missfallen,**
especially particularly seemed Rutzkoy.DAT the.NOM fact.NOM to displease
dass er zusammen mit Schumeiko [...] suspendiert wurde: (...)
that he together with Shumeyko suspended was
(NZZ_1993_09_02_a25_seg6_s8)
Rutzkoy seemed particularly displeased by the fact that he was suspended along with Shumeyko:

3.1.4 propositional

A stimulus is treated as *propositional* if it is 1. syntactically clausal and semantically propositional (this includes non-finite clauses) or 2. realised as a pronoun that refers to a proposition. The second conjunct of 1. excludes free relative clauses as in (104).¹³ The presence or absence of an *es*-correlate does not make a difference. Semantically propositional in the sense relevant here are not only propositions proper but also the denotation of e.g. some non-finite clauses that may be analysed to refer to events or situations.

***dass*-clause without an *es*-correlate:**

- (93) **Dass die Vernunft dieser Männer und deren langfristige**
that the prudence these.GEN men.GEN and their long-term
Arbeitskonzeption nun schon als "Modell Ajax im Schwarzwald"
work.conception now already as model Ajax in.the Black.Forrest
gefeiert wird, schmeichelt zwar ein bisschen, überheblich wird
celebrated becomes flatters though a bit arrogant becomes
deswegen keiner.
because.of.this nobody (NZZ_1996_03_19_a161_seg3_s20)
Although it is a little flattering that the prudence of these men and their long-term working conception is now being celebrated as the "Ajax in the Black Forrest model", no one gets conceited about it.

***dass*-clause with an *es*-correlate:**

- (94) **Es leuchtet ein, dass eine solche Erhebung für die Umwelt**
it is.evident PRT that a such raising for the.ACC environment.ACC
vorteilhaft ist.
beneficial is (NZZ_1997_09_02_a165_seg2_s15)
It is evident that such a survey/rising/charging is beneficial to the environment.

¹³ Free relative clauses must be distinguished from sentences having the same form that are traditionally called "indirekte Fragesätze" (*indirect interrogative clauses*). Zifonun et al. (1997, p. 2263ff.) draw the distinction in a slightly different way, distinguishing "gegenstandsfundierte W-Sätze" (object-based w-clause, where a w-clause is a clause introduced by a phrase containing a w-element like *wie* (*how*), *wer* (*who*), *was* (*what*), *welcher* (*which*), *worüber* (*about what*), etc., cf. *ibid.*) and "propositionsfundierte W-Sätze" (proposition-based w-clauses). They offer a range of tests that allow to distinguish them. While we classify the latter as *propositional*, the former are usually *ambiguous* (but they could also be *inanim* or theoretically even *anim/anim_proxy*). If a clause is ambiguous between an object-based and a proposition-based reading, it will usually also be considered *ambiguous* (exception: it is clear from the context that the object on the object-based reading has to be a proposition).

pronoun referring to a proposition

- (95) **Niemand steuert diesen Prozess; dies ängstigt** die Kontrollsuchtigen.
nobody controls this process this.NOM frightens the control.addicts.ACC
(NZZ_1999_12_30_a24_seg10_s11)
Nobody controls this process; this frightens the control addicts.

In examples like below, we take *es* to be a phoric pronoun that refers to the content of the *wenn*-clause:

- (96) **Womöglich hätte es ihn sogar amüsiert**, wenn ich ihm diese Frage
Possibly have.SBJV it him.ACC even amused if I him this question
gestellt hätte.
posed have.SBJV (NZZ_1996_02_20_a107_seg6_s16)
It might even have amused him if I had asked him this question.

non-finite clause + *es*-correlate

- (97) [...] Welcher Künstlerrunde hätte **es nicht geschmeichelt, sich ein**
Which round.of.artists.DAT have.SBJV it not flattered REFL a
veritables Bettlerbankett zu nennen?
veritable beggars'.banquet to call (NZZ_1994_05_14_a231_seg3_s3)
Which round of artists would not have been flattered to call itself a veritable
beggars' banquet?

proposition-based *w*-clause (cf. footnote on page 19)

- (98) **Wie sicher und souverän er diese Führung hielt, imponierte.**
how safe and sovereign he this lead held impressed
(NZZ_1993_01_28_a120_seg2_s17)
It was impressive how securely and sovereignly he held this lead.

3.1.5 ambiguous

From the sentence only, it is not clear which of the other categories the stimulus belongs to. This will mostly apply if the antecedent of the pronoun realising the stimulus is not part of the tagged sentence; but it is also used when there are two possible antecedents for a pronoun that belong to different categories, or when possible readings of a stimulus NP belong to different categories and cannot be sufficiently disambiguated in context. Many free relative clauses with *was* (*what*) and clauses that may or may not be free relative clauses (cf. footnote on page 19) also fall into this category.

(99) **Was** mag Herrn Makishima **bekümmern**?

what.NOM might mister.ACC Makashima.ACC concern

(NZZ_1999_10_20_a203_seg9_s1)

What might it be that troubles Mr Makashima?

(100) **Sie** soll mich **faszinieren**?

she shall me.ACC fascinate

(NZZ_1994_06_10_a219_seg8_s2)

She is supposed to fascinate me?

A person named *Schubert* or the famous composer's oeuvre?

(101) Dass **Schubert** **sie** **verwirren würde** [...] hätten sie
that Schubert.NOM them.ACC confuse would have.SBJV they

gleich gewusst, als sie sich kennenlernten .

immediately known when they REFL got.to.know

When they met for the first time, they immediately knew that Schubert would confuse them.

Several possible referents for *es*: the proposition expressed by the initial clause, the procedure (*inanim*), the meat (*inanim*).

(102) **Das Fleisch** wird **butterzart**, und man muss auch nicht

the meat.NOM becomes tender.as.butter and one must also not

unbedingt etwas gegen **dieses Vorgehen** haben - aber es verändert

categorically something against this procedure.NOM have but it changes

die Struktur **des Fleisches** ein bisschen, und mir **gefällt es**

the structure.F the.GEN meat.N.GEN a bit and me.DAT pleases it.NOM

einfach nicht.

simply not (NZZ_1993_06_25_a210_seg2_s15)

The meat becomes tender as butter – and one does not necessarily have to have anything against this procedure – but it changes the structure of the meat a bit, and I just don't like it.

quantifier

(103) **Nichts** schockiert Madame de Sevigne.

nothing.NOM shocks Madame de Sévigné

(NZZ_1996_04_18_a147_seg7_s13)

Nothing shocks Madame de Sévigné.

free relative clause with *was* (*what*)

(104) [...] **was er im fernen Südamerika zu sehen bekam**, schien ihn zu
what he in.the distant South.America to see got seemed him.ACC to
entzücken.

delight (NZZ_1999_07_28_a187_seg3_s11)

What he got to see in faraway South America seemed to delight him.

3.1.6 clash_of_coordinations

This category is used if the stimulus is an NP consisting of two coordinated NPs that differ in animacy, or a pronoun referring to (the sum/set of) entities of differing status.

anim and inanim

(105) **Die vielen Personen und kleinen Sequenzen** [...] **verwirren** allerdings **die**
the many persons and little sequences confuse however the
Betrachter.

beholders.ACC (NZZ_1995_10_26_a135_seg3_s26)

The many people and small sequences, however, confuse the beholders.

anim and anim_proxy

(106) Am stärksten imponierten mir damals **George Clinton, Bootsie**
SUP¹⁴ strongest impressed me.DAT at.that.time George Clinton Bootsie
Collins und ihre Bands Parliament/Funkadelic.

Collins and their bands Parliament/Funkadelic

(NZZ_1995_10_28_a158_seg8_s11)

The ones who impressed me most were George Clinton, Bootsie Collins, and their bands Parliament/Funkadelic.

¹⁴ superlative marker

pronoun

- (107) Einen Tag lang wollen sie sich [...] amüsieren und alles vergessen,
one day long want they REFL amuse and everything forget
was sie zu Hause **bedrückt** - eintönige Arbeit, strenge Eltern, a
what them.ACC at home distresses monotonous work strict parents eine
feindselige Schwiegerfamilie und rassistische Nachbarn [...].
hostile in-law.family and racist neighbours
(NZZ_1994_06_17_a214_seg4_s2)
For one day they want to amuse themselves and forget everything that
depresses them at home – monotonous work, strict parents, hostile in-laws, and
racist neighbours.

3.2 Stimulus_PP

Some prepositions can be used to indicate stimuli. By using this category, we do not want to commit to any theoretical analysis of such constructions, but we consider it necessary to document their occurrence. Therefore, all sentences containing a PP that can be considered to express (part of) a stimulus should be annotated accordingly. We have a very broad concept of a stimulus here that includes e.g. *von*-PPs in passive sentences or PPs headed by *als* (*as*) in examples like (111).

Other interpretations of the (usually polysemous) prepositions are considered irrelevant for this annotation. If there are two stimulus PPs, the prepositions should be separated by a comma. Use the standard citation form of the preposition also for portmanteau morphemes like *am* (*an* + *dem*, *at the*). Pronominal adverbs like *dafür* or *darüber* are also not annotated differently from the prepositions they derive from (but a comment is obligatory, cf. 4.1.5.2 *pronominal_adverb*).

An (incomplete) list of prepositions with relevant readings: *als*, *an*, *angesichts*, *auf*, *bei*, *dank*, *durch*, *für*, *in*, *mit*, *ob*, *um*, *über*, *von*, *vor*, *wegen*

- (108) Um so mehr **fällt an** Ruth Liepmans Lebensbericht **auf**, wie vollkommen
at so more strikes at Ruth Liepman.GEN life.story PRT how completely
uneitel sie erzählt.
modestly she narrates (NZZ_1993_07_08_a43_seg2_s18)
What is all the more striking about Ruth Liepman's life story is how completely
unpretentiously she narrates.

(109) Sie **freue sich** jetzt **auf** ihre Familie, gab Lucid lachend
she be.happy REFL now on her.ACC family.ACC announced Lucid laughingly
bekannt.
PRT. (NZZ_1996_09_27_a72_seg2_s7)
Lucid laughingly announced that she is excited now to be with/meet her family.

(110) Sie **fielen durch** eine unsichere Fahrweise **auf**.
they struck through an insecure style.of.driving PRT
(NZZ_1996_11_28_a170_seg12_s4)
They attracted attention due to their insecure way of driving.

controversial:

(111) Die Verteidiger Meier (Chur) und Seger (Uzwil) imponierten **als** "Abräumer"
the defenders Meier Chur and Seger Uzwil impressed as enforcers
an der Bande [...].
at the boards.SG (NZZ_1995_12_29_a138_seg7_s7)
The defenders Meier (Chur) and Seger (Uzwil) were impressive as "enforcers"
on the boards.

annotate *an*, not *am*:

(112) Einleitend [...] erklärt Jean Nouvel, was ihn **am** gegenwärtigen
introductorily explains Jean Nouvel what him.ACC at.the contemporary
Design interessiert [...].
design interests (NZZ_1995_04_21_a116_seg7_s1)
In the beginning, Jean Nouvel explains what interests him about contemporary
design.

+ comment 4.1.1.4 *ambiguous* because of PP attachment ambiguity

(113) Eher hatte er ein Gesicht [...] das ihn als einen Mann auswies, den
rather had he a face that him as a man designated whom.ACC
das Jahrhundert **mit seinem Lärm** **bekümmert**.
the century with its.DAT noise.DAT distresses
(NZZ_1994_02_11_a205_seg5_s3)
Rather, he had a face that showed that he was a men distressed by the century's
noise / the century and its noise.

pronominal_adverb (annotate über):

- (114) Angesichts der deutlich verbesserten Umsatzrentabilität zeigte sich die
given the considerably improved profit.on.sales.GEN showed REFL the
Geschäftsleitung [...] **darüber** nicht **bekümmert**.
management [...] about.this not distressed
(NZZ_1998_05_06_a109_seg4_s4)
Given the considerably improved profit on sales, the management [...] was not
distressed by this.

not a stimulus PP (mit-PP clearly instrumental)

- (115) Es war dann der Routinier, der [...] das Tempo bestimmte [...] und
it was then the old.hand who the pace determined and
damit den Äthiopier zu **zermürben** versuchte.
with.this the Ethiopian to demoralise tried
(NZZ_1993_08_23_a106_seg2_s3)
It was the veteran then who set the pace and tried to demoralise the Ethiopian
this way.

- (116) Der Vater **schücherte** die Mutter noch lange **mit Drohungen ein**.
the father intimidated the mother.ACC still long with threats PRT
(NZZ_1994_05_21_a86_seg2_s7)
The father continued to intimidate the mother with threats for a long time.

- (117) Die Regierung wolle **mit dieser Politik** die Bevölkerung
the government wants.SBJV with this policy.DAT the population.ACC
einschüchtern [...].
intimidate [...] (NZZ_1993_05_07_a20_seg3_s3)
With this policy, the government wants to intimidate the people [...].

controversial example: not a stimulus PP (locative)

- (118) **Im romantischen Rosensteinpark** begeistern die Blumenwiesen und
in.the romantic Rosenstein.Park enthuse the flower.meadows and
mächtigen Kastanienbäume.
mighty chestnut.trees (NZZ_1993_06_08_a108_seg2_s25)
In romantic Rosenstein Park, the flower meadows and the mighty chestnut trees
are a delight.

3.3 Control

This category is only relevant if the EO verb is non-finite and has a silent subject controlled from outside the non-finite clause (PRO). For non-relevant sentences, the cell

in the spreadsheet is left blank. Instances of 2.8 *NoAux_V-PII* are not taken to fall into this category. It is desirable to annotate cases of control since they can go along with an uncertainty regarding the nature of the stimulus type (because with our verbs the stimulus will usually be the PRO subject).¹⁵ This is most pressing in the case of implicit control where the controller is not syntactically realised and which is frequent in German (Stiebels, 2010, p. 395). We annotate 3.1.5 *ambiguous* as *Stimulus_Type* only if the nature of the controller is not clear from the (semantic) context, cf. (121). Most controllers can be assumed to be animate, but this is not always the case, especially not if the control verb is *vermögen* (*to be able to*) or *wissen* (*to know*) (cf. Colomo, 2011 on their status as control verbs).

To tell cases of control apart from cases of raising, the following tests are used (cf. (Kiss, 1995), we generalise from verbs to predicates here):

1. Raising predicates allow for expletive subjects and they embed predicates that select expletive subjects; control predicates don't.
2. Many (but not all) raising predicates can embed subjectless predicates; control predicates never do.
3. Passivising the complement does not change the meaning of the whole sentence with raising predicates; with control predicates, however, there is a change in meaning.

Note that almost all modal verbs are raising verbs in German; exceptions include e.g. evidential *wollen* and abilitive verbs like *vermögen* or *wissen* (cf. Colomo, 2011).

Unproblematic standard case: controller (*ihm*) is (dative) object of control verb (*erlauben*)

- (119) Zudem **erlaubt ihm** die Vermittlung, [...] die politischen
 additionally allows him.DAT the mediation the political
 Konkurrenten **zu verwirren**.
 rivals.ACC to confuse (NZZ_1994_03_07_a5_seg6_s8)
 Additionally, mediation allows him to confuse his political rivals.

¹⁵ This is not the case with raising predicates, where the “missing” argument of the embedded predicate will invariably occur as (depending on the embedding predicate) subject or object. Control appears as a more complex issue due to phenomena like adjunct control, control shift, implicit control, non-local control, or variable control.

Implicit control with a passivised control verb. We annotate 3.1.1 *anim* as *Stimulus_Type* because in order to try something, one has to be a conscious being, and conscious beings count as animate for our purposes.

- (120) So **wird** mit allen Mitteln **versucht**, die
 so becomes with all means tried the
 Heimkehrwilligen **einzuschüchtern** [...].
 people.who.want.to.return.home.ACC intimidate
 (NZZ_1994_12_23_a24_seg5_s6)
 So, one tries to intimidate those who want to return home by all means.

Implicit control with a noun as the control predicate: We annotate 3.1.1 *anim* as *Stimulus_Type*.

- (121) Dies sei ein **Versuch** gewesen, die Verteidigung **einzuschüchtern**.
 this is.SBJV a try been the defence.ACC to.intimidate
 (NZZ_1995_08_04_a45_seg4_s10)
 This had been an attempt to intimidate the defence.

adjectival control predicate, animate (arbitrary) controller:

- (122) Es ist **unsinnig**, diese Leute mit der demütigenden
 it is silly these.ACC people.ACC with the humiliating
 Stempel-pflicht zu **quälen**.
 stamp-obligation.DAT to torment (NZZ_1993_03_04_a55_seg15_s11)
 It doesn't make sense to torment these people with the humiliating stamping
 requirement.

ambiguous (most probably propositional) controller with *vermögen*:

- (123) **Letzteres vermochte** die Organisatoren [...] jedoch nicht zu **entmutigen**.
 the.latter be.capable.of the organisers.ACC however not to discourage
 (NZZ_1995_02_09_a188_seg3_s7)
 The latter, however, could not discourage the organisers.

adjunct control:

- (124) **Sie** schossen vor ihrem Gesicht das MP-Magazin
 they shot in.front.of her face the magazine.of.a.submachine.gun
 leer, **um sie einzuschüchtern**.
 empty in.order.to her.ACC intimidate (NZZ_1993_10_05_a35_seg6_s3)
 They shot the SMG's magazine empty in front of her face in order to intimidate
 her.

not control but raising:

(125) Bis diese [...] den Zuschauer **zu quälen beginnt**.

until this.F the spectator.ACC to torment starts

(NZZ_1999_08_07_a226_seg5_s49)

Until this/she starts to torment the spectator.

(126) Doch den flämischen Rennfahrern **scheint 's zu behagen**.

but the.DAT Flemish.DAT racing.drivers.DAT seems it to please

(NZZ_1994_04_05_a147_seg4_s4)

But the Flemish racers seem to like it.

(127) Eben der Anspruch ist es aber, durch den Cristina Campo ihrem

precisely the ambition is it but through which Cristina Campo her.ACC

Kreis **imponiert haben muss**.

circle.ACC impressed have must (NZZ_1996_08_17_a135_seg5_s4)

But it is precisely this ambition by which Cristina Campo must have impressed her circle.

3.4 Other_stimulus_adjunct

In some cases, an additional stimulus is not realised as a PP but in another syntactic construction, e.g. as a non-finite clause or a *dass*-clause. Use *x* or leave blank. Examples like these have been argued to contain an empty pronominal adverb (cf. Gunkel & Hartmann, 2020).

(128) [...] er habe **sich geekelt, mit Familienmitgliedern einen Apfel zu**

he has.SBJV REFL disgusted with family.members.DAT a.ACC apple.ACC to

teilen [...].

share (NZZ_1996_05_30_a178_seg6_s7)

He had been disgusted to share an apple with family members.

(129) Gate Gourmet wäre [...] **interessiert, diese vollständig zu übernehmen**.

Gate Gourmet is.SBJV interested these.ACC completely to take.over

(NZZ_1995_06_12_a65_seg4_s15)

Gate Gourmet would be interested in taking them over completely.

(130) Dieser **ärgerte sich** am Ziel, **dass** er [...] die ihm von der

this.M angered REFL at.the finish that he the him.DAT by the

Teamleitung gebotene Chance nicht besser genützt hatte.

team.management offered chance not better used had

(NZZ_1995_03_20_a146_seg8_s5)

After the race, he was annoyed that he had not taken better use of the chance offered to him by the team management.

not *Other_stimulus_adjunct* (relevant phrase not part of the same sentence)

- (131) Und man wunderte sich: Warum lässt man derlei an Zürich
and one wonders REFL why lets one such.ACC at Zurich.DAT
vorbeiziehen?
pass (NZZ_1999_10_26_a180_seg3_s9)
One wonders: Why does one let such things go past Zurich?

4 Comments & Misc

The following section lists the additional comments that are used for notable phenomena not reflected in the above guidelines. These will mostly regard sentence- and annotation-based characteristics as well as certain (semantic) features of stimuli and experiencers.

4.1 Comments

Multiple comments are possible and should be separated by comma. We group the comments into five categories here, but this is only to increase readability and for ease of use.

4.1.1 General (sentence-based)

4.1.1.1 *false_hit*

To be used with 1.1 *not_of_interest* if the example is incorrectly tagged (non-verbal occurrence) or clearly applies to a non-relevant verbal form, mostly due to homonymy. For occurrences of verbal polysemy, cf. 4.1.2.1 *polysemous*.

homonymous verb (*fallen (to fall) instead of gefallen (to like)*):

- (132) Dann sind wir kopfüber in die Freiheit **gefallen**. "
Then are we headfirst into the liberty fallen
(NZZ_1993_02_06_a160_seg4_s70)
Then, we fell headfirst into liberty.

different language (French):

- (133) Une fille sur la plage. (NZZ_1996_02_24_a166_seg5_s2)

different POS (PII as attributive adjective in NP):

- (134) Balladurs etwas aus der Mode gekommene Eleganz, seine ausgesuchte Höflichkeit, seine vornehmen, aber abgeschliffenen Formulierungen erweckten mit ihrer Unzeitgemässheit die erstaunt kommentierte anästhetische Wirkung, auf welche **die von Affären, politischen Manövern und Niedrigkeiten, staatlicher Ohnmacht angesichts der Krise und Arbeitslosigkeit verwirrte öffentliche Meinung** in der Endzeit des Mitterrandismus bereitwillig ansprach.
Balladur.GEN slightly out the fashion came elegance his selected politeness his genteel but musty wordings awaken with their unseasonableness the surprised commented anaesthetic effect on which the by affairs political manoeuvres and ignoblenesses state impotence in.the.face.of the crisis and unemployment confused public opinion in the end.time the.GEN Mitterrandism.GEN gladly responded (NZZ_1995_01_21_a18_seg9_s2)
With their unseasonableness, Balladur's slightly out-of-fashion elegance, his refined politeness, his genteel but musty phrasing aroused an anaesthetic effect which lead to astonished comments, and public opinion in the last days of Mitterrandism – confused by affairs, political manoeuvres and ignoblenesses, state impotence in the face of crisis, and unemployment – gladly responded to it.

4.1.1.2 duplicate

Duplicate or highly similar example, the latter (or, in case of headlines, the incomplete) occurrence should be annotated 1.1 *not_of_interest*.

- (135) Seine Frau, die reizende Reggie Lambert (Audrey Hepburn), langweilt sich derweil in den französischen Alpen.
his wife the charming Reggie Lambert Audrey Hepburn bores REFL meanwhile in the French Alps (NZZ_1998_10_07_a146_seg7_s3)
Meanwhile, his wife, the charming Reggie Lambert (Audrey Hepburn), is bored in the French Alps.
- (136) Seine Frau, die reizende Reggie Lambert, langweilt sich derweil in den französischen Alpen beim Wintersport.
his wife the charming Reggie Lambert bores REFL meanwhile in the French Alps at.the.winter.sports (NZZ_1994_01_29_a217_seg1_s11)
Meanwhile, his wife, the charming Reggie Lambert, is bored with/while doing winter sports in the French Alps.

4.1.1.3 ungrammatical

If the clause of interest is ungrammatical, annotate 1.1 *not_of_interest* and comment *ungrammatical*. Be sure not to confuse this category with 4.1.1.9 *variation*.

(137) *Tatsache ist, dass die jüngste wirtschaftliche Abflachung
fact is that the.NOM most.recent.NOM economic.NOM flattening.NOM
die Werbung mit dem Fussball besonders hart **zugesetzt hat**.
the.NOM advertisement.NOM with the football particularly hard tormented has
(NZZ_1994_06_13_a226_seg10_s5)

(137) is ungrammatical because the NP *die Werbung mit dem Fußball* should bear dative (instead of nominative) case.

4.1.1.4 ambiguous

This comment is used with all sentence-level ambiguities. For ambiguities caused by the lexical semantics of the verb, cf. 4.1.2.1 *polysemous* and 4.1.2.2 *psych_ambiguous*. Use the most prominent reading as the basis for the annotation.

PP attachment:

(138) An einem Spieltag gelang es ihnen gar, die Spitzenclubs der
at one matchday succeeded it them.DAT even the top.clubs the.GEN
ersten Division **mit dem bundesweit höchsten**
first.GEN division.GEN with the nationwide highest
Publikumszuspruch zu beschämen.
popularity.among.the.audience to shame
(NZZ_1996_12_10_a166_seg3_s5)

One matchday, they even managed to put the top clubs from the first league to shame by having the highest number of visitors nationwide. / One matchday, they even managed to put the top clubs from the first league having the highest number of visitors nationwide to shame.

2.2 X-STM_V (preferred) or 2.1 X-STM_V_Y-EXP with *die Phantasie* (the imagination) left out elliptically?

(139) Der Umgang der katholischen Kirche mit Geld interessiert,
the dealing the.GEN Catholic.GEN Church.GEN with money interests
irritiert, **provoziert** und nährt **die Phantasie** [...].
irritates provokes and feeds the imagination.ACC
(NZZ_1999_06_05_a119_seg5_s1)

The Catholic Church's money management is interesting, irritating and provoking, and it feeds the imagination. / The Catholic Church's money management interests anyone's imagination, irritates anyone's imagination, provokes anyone's imagination, and feeds anyone's imagination. (among others)

2.12 Nom-EXP_V but 2.2 X-STM_V theoretically also possible:

(140) " Bei so heftigen Tönen [...] konnte **man** [...] fast ein wenig **erschrecken**.
with such intense sounds could one almost a little frighten
(NZZ_1996_11_20_a127_seg3_s15)

One could almost be a little frightened by such intense sounds. / While there were such intense sounds, one could have almost been in the business of frightening for a while.

2.6 X_V_refl but the reflexive could also be anaphoric (in this case with a reciprocal interpretation):

(141) Man [...] weiss, dass **sie sich langweilen und quälen** [...].
one knows that they REFL bore and torture
(NZZ_1999_09_14_a128_seg3_s14)

One knows that they are bored and struggling. / One knows that they are bored and that they torture. / One knows that they bore and torment each other.

Phoric (→ 2.1 X-STM_V_Y-EXP) or non-phoric (2.9 Acc/Dat-EXP_V)? The latter reading is more likely because one would prefer a different pronoun (e.g. *das* (that)) on the former.

(142) Es ekelte sie.
it disgusted her/them
(NZZ_1999_05_08_a249_seg6_s100)
She was / they were disgusted. / It disgusted her/them.

Unclear if this example reflects an incorrect sentence segmentation (animate stimulus: Mother Teresa) or (incorrect) replication by the author (inanimate stimulus: Mother Teresa's testament)?

- (143) Das Testament der Mutter Teresa Mutter Teresa begeisterte und
the testament of.GEN Mother Teresa.GEN Mother Teresa inspired and
befremdete.
alienated (NZZ_1997_09_13_a134_seg3_s1)
Mother Teresa's testament Mother Teresa inspired and alienated people.

4.1.1.5 fragment

Incomplete example, possibly based on incorrect segmentation. Annotate as usual if possible, otherwise annotation should be 1.1 *not_of_interest*.

Annotation possible:

- (144) Der Eiermann [...] musste geärgert und nachgeahmt werden, wie er " Eieeeeer!
the egg.man had.to angered and imitated become how he eggs
(NZZ_1996_12_27_a125_seg4_s13)
The egg salesman had to be teased and imitated, how he "eeeeeeegs!

not_of_interest (annotation of 3.1 *Stimulus_Type* not possible):

- (145) - mag Intertextualitätsfahnder faszinieren, sprachlich
may people.searching.for.intertextual.references fascinate, linguistically
führt es zu einem befremdlichen Kauderwelsch.
leads it to a strange gibberish
(NZZ_1994_09_29_a205_seg8_s8)
may fascinate people searching for intertextual references, linguistically it leads
to a strange gibberish

4.1.1.6 headline

The "sentence" is possibly a headline. *headline* often combines with 4.1.1.7 *ellipsis*. If a regular annotation is still possible, it should be performed. Use 1.1 *not_of_interest* if not. In any case, the comment is required. Punctuation is often missing in headlines, distinguishing it from 4.1.1.7 *ellipsis* and 4.1.1.5 *fragment*.

headline (as indicated by missing punctuation) but not *ellipsis*:

- (146) Die Gentech-Gegner erschrecken die Anleger
the opponents.of genetic.engineering.NOM scare the investors.ACC
(NZZ_1999_09_14_a100_seg2_s1)
The opponents of genetic engineering scare the investors

+ *ellipsis*:

- (147) Roy Hodgson tief beeindruckt
Roy Hodgson deeply impressed (NZZ_1993_02_26_a151_seg1_s1)

4.1.1.7 *ellipsis*

Some part of the pattern is elided elliptically. This may cooccur with 4.1.1.6 *headline* but it does not have to.

auxiliary *ellipsis*

- (148) Die Epigonen Duchamps sind noch immer fleissig, Museen und
the epigones Duchamp.GEN are still ever industrious museums.NOM and
Handel begeistert.
trade.NOM excited (NZZ_1993_01_06_a41_seg2_s7)
Duchamp's epigones are still busy, museums and trade are excited.

sein_V-PII + headline:

- (149) Römer Deputierte über Scalfaro verärgert
Roman deputies.NOM about Scalfaro.ACC angry
(NZZ_1993_10_07_a16_seg1_s1)
Roman deputies angry at/about Scalfaro

Headlines (as indicated by missing determiners): + *headline*

- (150) Ehrung für Kohl ärgert britische Europagegner
award.NOM for Kohl.ACC annoys British.ACC opponents.of.Europe.ACC
(NZZ_1998_02_20_a20_seg1_s1)
Award for Kohl annoys British opponents of Europe

4.1.1.8 *title*

The verb, the experiencer, the stimulus, or the whole sentence is (part of) a title or contains it. Should be regularly annotated if possible; use 1.1 *not_of_interest* if not. In any case, the comment is required.

The whole clause containing the verb is the title. Annotation possible:

- (151) Ein Element der Geschichte [...] hat Shalev in sein Kinderbuch
one element the.GEN story.GEN has Shalev into his children's.book
"Papa nervt" übernommen.
"dad annoys" adopted (NZZ_1994_07_14_a107_seg7_s10)
Shalev adopted one element of the story in his children's book "My Father
Always Embarrasses Me".

Annotation impossible:

- (152) 20.15 Gepeinigt!
tormented
(NZZ_1998_04_09_a162_seg27_s16)
20.15 The Belt

stimulus NP contains title. Annotation possible:

- (153) **Oliver Stones "JFK"** verstörte und irritierte das internationale
Oliver.GEN Stone.GEN JFK disturbed and confounded the international
Publikum [...].
audience.ACC (NZZ_1996_04_11_a139_seg9_s1)
Oliver Stone's "JFK" disturbed and confounded the international audience.

4.1.1.9 variation

This comment is used with all forms of use that are clearly alien to the annotators' north-western German Standard German (we will eschew judgement on whether a certain construction qualifies as dialectal since it will not be possible in all cases to distinguish influences of dialects from features of Swiss Standard German unfamiliar to the annotators). This does not include diachronic variation. Not only STM, EXP and verb are relevant here, but the complete sentence.

reflexive usage of *nerven* (annoy) is chiefly Swiss German (Variantengrammatik des Standarddeutschen, 2018) - also contains some French based loanwords that are not commonly used in FRG Standard German:

- (154) Mitosevic wird **sich** später noch mehr **genervt haben über das**
Mitosevic.NOM will REFL later even more annoyed have about the
Rendement seiner Equipe.
output.ACC his.GEN team.GEN (NZZ_1998_09_16_a195_seg3_s16)
Mitosevic [probably recte Mitošević] will have been even more annoyed about
the performance of his team later.

4.1.1.10 idiomatic

Constructions or phrases that can be considered idiomatic, be aware of potential overlap to 4.1.10 *collocation*.

- (155) **Sein Rücken** kann bei Tisch **entzücken**.
his back.NOM can at table.DAT delight
(NZZ_1996_10_26_a223_seg4_s36)
Its back can be a delight at the (dinner) table.

Cf. the German proverb *Ein schöner Rücken kann auch entzücken* (A beautiful back can also be charming).

4.1.1.11 collocation

Noticeable collocational modifications that are not already considered idiomatic, e.g. the frequent cooccurrences of *sauer* (sour) and *aufstoßen* (to anger, to strike (as), literally to belch)).

- (156) Sein Auftreten [...] **stösst** manchem der altgedienten Genossen
his comportment belches some.DAT the.GEN long-serving.GEN comrades.GEN
sauer auf.
sour PRT (NZZ_1998_03_03_a23_seg8_s9)
His comportment offends some of the veteran comrades. / Some veteran
comrades dislike the way he comports himself.

4.1.2 Verb-based

4.1.2.1 polysemous

Cases of (assumed) verbal polysemy that are not reflected in the above categories (1.1 *non-psych*), i.e. the reading of the verb is psych-related but it is different from the predominant one.

(157) Dem aussenstehenden Beobachter **stösst** unweigerlich die
 the.DAT outside.DAT observer.DAT belches inevitably the.NOM
 Vermutung **auf**, dass es wohl nie zu einer "Dorsaz-Affäre"
 suspicion.NOM PRT that it probably never to a Dorsaz-affair
 gekommen wäre, wenn bei der damaligen Walliser Kantonalbank [...] nicht
 come is.SBJV if at the at.that.time Valais cantonal.bank not
 eine heillose Schluderei [...] bestanden hätte.
 a hopeless sloppiness existed has.SBJV
 (NZZ_1998_04_02_a97_seg3_s6)
 The external observer inevitably suspects that there would never have been a
 "Dorsaz affair" if it had not been for the hopeless sloppiness at the Banque
 cantonale du Valais at the time.

4.1.2.2 psych_ambiguous

The sentence has a psych as well as a non-psych reading. To be used even if one of the readings is far more salient.

(158) Einzelnen Videasten dürfte es **schwerfallen**, sich umzustellen.
 Individual.DAT videographers.DAT might it be.difficult.to REFL adjust
 (NZZ_1993_12_24_a33_seg5_s12)
 It will be difficult / emotionally challenging for some videographers to adjust
 themselves.

4.1.2.3 utterance_reading

The verb has an utterance reading and the utterance is presented as an (indirect) quotation. This includes examples like (159) and (160), where the experiencer of a certain emotion utters something, as well as examples like (161), where the person uttering something is not the person experiencing the emotional state.

indirect quotation:

(159) Am Montag **empörte sich** [...] İlhan Selçuk in der Zeitung "Cumhuriyet",
 on.the Monday incensed REFL İlhan Selçuk in the newspaper Cumhuriyet
die türkische Presse befinde sich in tiefem Schlaf.
 the Turkish press be.situated.SBJV REFL in deep sleep
 (NZZ_1993_10_19_a32_seg8_s8)
 On Monday, İlhan Selçuk wrote a resentful article in the newspaper
 "Cumhuriyet" stating that the Turkish press is in a deep sleep.

direct quotation:

(160) "Ich riskierte etwas zu viel", ärgerte er sich.

I risked a.bit too much annoyed he REFL
(NZZ_1994_08_29_a114_seg2_s6)

"I risked a bit too much", he said, and the way he said it showed that he was annoyed by it.

(161) " Ich bin du ", irritiert ihn der Alte [...].

I am you perplexed him.ACC the old
(NZZ_1994_04_20_a137_seg3_s8)

"I am you", the old man said to him, and this perplexed him.

4.1.3 STM-based

4.1.3.1 metonymic_STM

The STM argument is metonymic. We have a broad notion of metonymy that includes synecdoche. Note that there also is 4.1.4.4 *EXP_anim_proxy*. This comment is not used with stimulus PPs in the sense of 3.2.

(162) Es lässt sich nun trefflich darüber spekulieren, ob und wie
it lets REFL now splendidly about.this speculate whether and how
stark **Peking** mit seinem Säbelrasseln die Taiwaner **eingeschüchtert**
strongly Beijing with its sabre-rattling the Taiwanese.ACC intimidated
[...] hat [...].

has (NZZ_1995_12_04_a18_seg2_s7)

It is open to speculation whether and to what extent Beijing has intimidated the Taiwanese with its sabre-rattling.

4.1.3.2 metaphoric_STM

The STM argument is metaphoric. Note that there also is 4.1.4.4 *EXP_anim_proxy*. This comment is not used with stimulus PPs within the meaning of 3.2.

Comment *metaphoric_STM*:

- (163) Der Optimismus sollte [...] nicht unbegründet sein, denn **die kräftigen Zuger "Mühlsteine" setzten** den Freiburgern arg zu.
the optimism should not unsubstantiated be because the strong
Zug millstones pressed the.DAT Fribourgeois.DAT severely PRT
(NZZ_1994_03_04_a192_seg3_s8)
The optimism proved to be well-founded because the powerful "millstones"
from Zug put a lot of pressure on the Fribourgeois / harassed the Fribourgeois
severely.

4.1.3.3 STM_coordination

The STM is syntactically realised using a coordination and the conjuncts have congruent animacy status (otherwise, cf. 3.1.6 and annotate *Stimulus_Type* accordingly). If the phrase expressing the stimulus is a pronoun, *coordination* should not be annotated even if the pronoun's antecedent is an XP coordination. This comment is not used with coordinations inside stimulus PPs in the sense of 3.2.

STM_coordination (inanim) (annotate only *STM_coordination*):

- (164) **Eine Ohreninfektion und Beinkrämpfe** plagten [...] Woosnam.
an ear.infection and leg.cramps plagued Woosnam
(NZZ_1993_09_27_a82_seg7_s9)
An ear infection and leg cramps plagued Woosnam.

propositional

- (165) Ihn **beunruhigt, dass** der Markt wenig transparent ist, **dass** vor allem in Marktsegmenten für exotische Instrumente ein hoher Konzentrationsgrad bestehe **und dass** für wichtige Marktteilnehmer keine Aufsichtsbehörden existieren.
him.ACC troubles that the market little transparent is that before
everything in market.segments for exotic instruments a high
degree.of.concentration exists and that for important market.participants
no supervisory.authorities exist (NZZ_1994_06_08_a35_seg8_s9)
He is concerned that the market is not very transparent, that there is a high
degree of concentration especially in market segments for exotic instruments,
and that important market participants lack supervisory authorities.

not *STM_coordination*

- (166) " In Wirklichkeit **bekümmerte** ihn [...] nur **eines**: sein Werk
in reality concerns him.ACC only one.NOM his work
in lebendiger Wirksamkeit zu erhalten und [...] die neue Oper aufgeführt zu
in vivid efficacy to preserve and the new opera performed to
sehen [...]. "
see (NZZ_1999_09_04_a214_seg5_s1)
In reality, he was concerned about only one thing: keeping his work in vivid
efficacy and seeing the new opera performed.

4.1.3.4 *STM_psych_noun*

The stimulus argument is an NP headed by a psych noun and the experiencer of the psychological state denoted by it is identical to the experiencer of the psychological state denoted by the verb. This comment is not used with psych nouns in stimulus PPs in the sense of 3.2.

- (167) aber die **Sorge** um verschollene Verwandte **quäle**
but the worry about lost.without.a.trace relatives torments.SBJV
sie spürbar.
her/them.ACC noticeably (NZZ_1999_06_05_a54_seg8_s7)
but the worry about relatives who have disappeared torments her/them
noticeably.

not *STM_psych_noun* due to non-identical experiencers

- (168) [...] die **Ehrfurcht** in der Stimme des Russen **befremdet** sie ein
the awe in the voice the.GEN Russian alienates her.ACC a
bisschen.
little (NZZ_1998_02_27_a143_seg3_s3)
The awe in the Russian's voice alienates her a little.

4.1.3.5 propositional content noun

The stimulus is a proposition semantically and syntactically an NP whose head is assumed to lack individual semantic content beyond the fact that it refers to a proposition.¹⁶ Common examples include *Tatsache* (*fact*), *Problem* (*problem*), *Fakt* (*fact*) etc. The propositional content can (but does not have to) be expressed elsewhere within the same sentence or even within the same NP, not only through a clause but

¹⁶ These nouns are described in the literature using many different names (cf. Kolhatkar et al., 2018), perhaps most prominently as *shell nouns* (Schmid, 2000).

also through an NP, PP ... Comment *PCN+C* if the propositional content is expressed within the same sentence, *PCN-C* if not. Of course, it is a pressing question how much semantic content is “not much”: If one is in doubt and the noun in question regularly takes a clausal complement, one can annotate *PCN+/-C*. These comments are not used with NPs in stimulus PPs in the sense of 3.2 or experiencer-indicating adjuncts in the sense of 4.1.4.6.

PCN+C:

(169) Ihn beunruhigten **die damals schon absehbaren Möglichkeiten,**
 him.ACC troubled the at.that.time already foreseeable possibilities
das Erbgut zu manipulieren.
 the genome to manipulate (NZZ_1995_08_19_a43_seg17_s6)
 The possibilities to manipulate genetic material, which were already foreseeable at that time, troubled him.

(170) **Der Vorwurf, die Bergkantone hätten kein Verständnis für die**
 the accusation the mountain.cantons have.SBJV no understanding for the
Wirtschaft, empörte den Tessiner Freisinnigen Marty.
 economy outraged the.ACC Ticinian.ACC liberal.ACC Marty.ACC
 (NZZ_1996_03_13_a49_seg9_s1)
 The accusation that the mountain cantons have no economic understanding outraged Marty, a liberal from Ticino.

(171) Ihn faszinierte **die Idee eines rein allegorischen Denkmals, ohne**
 him.ACC fascinated the idea a.GEN solely allegorical.GEN memorial without
Bildnis des Verstorbenen.
 portrait the.GEN deceased.GEN (NZZ_1995_02_22_a106_seg6_s3)
 He was fascinated by the idea of a purely allegorical memorial, without any portrait of the deceased.

(172) Weiter gibt es ein Minderheitenproblem in Bulgarien, wo **die türkische**
 also exists it a minority.problem in Bulgaria where the Turkish
Minorität derzeit bei jeder Regierungsbildung das Zünglein
 minority at.present at every formation.of.government the needle.index
an der Waage bildet - eine Tatsache, welche die bulgarische
 at the scale forms a fact which the.ACC Bulgarian.ACC
 Mehrheit [...] immer stärker irritiert.
 majority.ACC ever stronger irritates (NZZ_1993_03_12_a16_seg8_s5)
 There is also a minority problem in Bulgaria, where the Turkish minority currently tips the scales every time a government is formed – a fact which increasingly irritates the Bulgarian majority.

PCN-C:

- (173) Nur auf den ersten Blick befremdet **diese These**.
only at the first glance alienates this thesis
(NZZ_1994_01_14_a138_seg3_s7)
This thesis seems strange only at first glance.

not PCN:

- (174) **Dieses Vorgehen** sei dem Bundesrat sauer aufgestossen [...].
this approach is.SBJV the.DAT Federal.Council.DAT sour belched
(NZZ_1995_11_30_a30_seg6_s5)
The (member of) the Federal Council was annoyed by this approach.

- (175) Es sind **Floskeln dieser Art, die** dem aufmerksameren Teil
it are set.phrases this.GEN kind.GEN that the.DAT more.attentive.DAT part.DAT
der amerikanischen Bevölkerung sauer aufstossen.
the.GEN American.GEN population.GEN sour belch
(NZZ_1996_01_13_a25_seg8_s5)
Set phrases of this kind annoy the more attentive part of the American
population.

4.1.3.6 clearly_non-agentive

The stimulus is animate but clearly non-agentive, mostly used for plants and the like.

- (176) **Die zu den Schraubenbakterien zählenden Borrelien verwirren** die
the to the Spirochaetes belonging Borrelia confuse the
Mediziner seit Jahrhunderten mit einem Spektrum von sehr unterschiedlichen
physicians for centuries with a spectrum of very different
Krankheitsformen.
forms.of.disease (NZZ_1998_10_07_a196_seg4_s1)
Borrelia, which belong to the spirochete phylum, have been confusing
physicians for centuries with a spectrum of very different forms of disease.

4.1.4 EXP-based

4.1.4.1 metonymic_EXP

The EXP argument is metonymic. We have a broad notion of metonymy that includes synecdoche. This comment is not used with experiencer-indicating adjuncts in the sense of 4.1.4.6.

(177) In Berlin illustriert Böcklins Toteninsel [...], was **die**
 in Berlin illustrates Böcklin.GEN Isle.of.the.Dead.NOM what the
Romantik am einseitig grablastigen Etruskerbild
 romanticism.ACC at.the one-sidedly grave.heavy image.of.the.Etruscans
faszinierte.
 fascinated (NZZ_1993_04_14_a23_seg2_s20)
 In Berlin, Böcklin's Isle of the Dead illustrates what fascinated Romanticism
 about an image of the Etruscans which is overly dominated by funerary culture.

4.1.4.2 metaphoric_EXP

The EXP argument is metaphoric. This comment is not used with experiencer-indicating adjuncts in the sense of 4.1.4.6.

(178) Seitdem wird die europäische Kultur durch das Barbarische beunruhigt.
 since.then is the European.culture.NOM by the barbaric.ACC troubled
 (NZZ_1995_04_22_a185_seg7_s1)
 Since then, the European culture gets troubled by the „barbaric“.

4.1.4.3 EXP_coordination

The EXP argument is syntactically realised within a coordination. This comment is not used with experiencer-indicating adjuncts in the sense of 4.1.4.6, but it *can* be combined with 4.1.4.4 *EXP_anim_proxy*.

(179) Dies braucht Kohl und seine Riege allerdings auch nicht zu
 this.NOM need Kohl.ACC and his squad.ACC however also not to
beunruhigen.
 worry (NZZ_1993_01_20_a14_seg2_s16)
 However, this need not worry Kohl and his squad.

4.1.4.4 EXP_anim_proxy

The experiencer is a (complex social) entity one can attribute a psychological state to, although it is not *bona fide* animate. In the case of social entities, the psychological state should not be totally dependent on the psychological states of their members: Annotate *EXP_anim_proxy* if the experiencer is *eine Zeitung* (a newspaper) but not if it is *das Publikum* (the audience). Typical *anim_proxy* experiencers are institutions, organisations, nations etc. If it is not clear whether the stimulus is *EXP_anim_proxy* or plainly animate, do not use this comment. Note that this comment may be used with every experiencer, not only with the ones in object position (but experiencer indicating adjuncts (cf. 4.1.4.6.) do not count as experiencers here).

(180) Nach dem Bericht der «Milchzeitung» **zeigten sich** auch
 according.to/after the report the.GEN Milchzeitung.GEN showed REFL also
die Bauernverbände interessiert.
 the farmers'.associations interested (NZZ_1994_07_13_a92_seg22_s11)
 According to/Following the report in the Milchzeitung, the farmers'
 associations also showed interest.

It is clear from the sentence that *der Meister (the champion)* – although it could generally also refer to a single person – has to refer to a team or club.

(181) Damit war **der Meister**, der während 40 Minuten elf Stürmer
 with.this was the champion who during 40 minutes eleven forwards
 einsetzte, wieder in der Situation, die ihm behagt.
 deployed again in the situation that him.DAT pleases.DAT
 (NZZ_1995_03_15_a179_seg3_s7)
 This put the champion, who used eleven forwards during 40 minutes, back in
 the situation they are comfortable with.

Some examples might be problematic with respect to the distinction between 4.1.4.4
EXP_anim_proxy, 4.1.4.1 *metonymic_EXP*, and a plain experiencer:

-kreise (circles) neither anim_proxy nor metonymic but simply anim:

(182) Während die Bauten von Baldeweg, [...] und Mateo vor allem **die**
 while the buildings of Baldeweg and Mateo before all the.ACC
Fachkreise begeistern, wurde Rafael Moneo zum gefeierten
 professional.circles.ACC enthuse became Rafael Moneo to.the celebrated
 Star.
 star.DAT (NZZ_1993_07_12_a42_seg2_s3)
 While Baldeweg's and Mateo's buildings mainly enthuse experts, Rafael Moneo
 became a celebrity.

-welt (world) typically EXP_anim_proxy:

(183) Die Musik [...] schockierte **die Jazzwelt.**
 the music shocked the jazz.world.ACC
 (NZZ_1993_01_08_a77_seg2_s16)
 The music shocked the jazz world.

Zensur (censorship) taken to be an institution. Might also have a metonymic reading (use Misc to indicate that)

- (184) **Der Metternich-schen Zensur** behagten derlei Frivolitäten nicht.
the.DAT Metternich-ean.DAT censorship pleased such frivolities not
(NZZ_1996_05_06_a93_seg3_s4)
Metternich's body of censors were not pleased with such frivolities.

plain experiencer:

- (185) [...] **breite Schichten** liessen sich weiterhin [...] einschüchtern.
broad.NOM layers.NOM let REFL still intimidate
(NZZ_1993_11_25_a44_seg10_s1)
It was still possible to intimidate large parts of society.

Publikum (audience) not EXP_anim_proxy

- (186) Anlässlich der Preisverleihung [...] zeigte sich **das Publikum** von
on.the.occasion the.GEN award.ceremony showed REFL the audience by
Text und Lesung beeindruckt.
text.DAT and reading.DAT impressed (NZZ_1993_02_06_a37_seg3_s10)
At the award ceremony, the audience was discernibly impressed by the text and
the reading.

Cities, countries, nations may be (EXP_)anim_proxy like below, but cf. (87)

- (187) Ebenso müsste die zwangsweise Verlagerung des
equally must.SBJV the compulsory relocation the.GEN
Gütertransitverkehrs auf die Schiene **Deutschland, Italien aber auch**
freight.transit.traffic.GEN onto the rail Germany.ACC Italy.ACC but also
die "Transporteurenation" Holland verärgern.
the haulier.nation the.Netherlands.ACC anger
(NZZ_1994_02_03_a112_seg8_s4)
Likewise, the forced shift of transit freight traffic to rail would have to anger
Germany and Italy, but also the "nation of hauliers", the Netherlands.

4.1.4.5 EXP-related_object

The direct object is not the experiencer but a (sometimes non-physical) part or a property of them. We do not pursue a further classification of the direct objects at the moment.¹⁷

¹⁷ Mathieu (1995) distinguishes several classes of nouns heading such NPs in French.

(188) **Den Blick erfreut** das viele Schöne.
 the.ACC glance.ACC pleases the.NOM much.NOM beautiful.NOM
 (NZZ_1995_06_24_a215_seg3_s5)
 All those beautiful things please the eye.

(189) Und es gibt fürderhin keine Stunde mehr, wo dieser Name nicht
 and it exists henceforth no hour anymore where this name not
seinen Schlaf verängstigt und sein Wachsein.
 his sleep frightens and his being.awake
 (NZZ_1995_10_07_a177_seg8_s14)
 And henceforth there is not an hour in which this name does not make his sleep
 and wakefulness fearful.

In some cases, it is not easy to decide whether to annotate a psych reading and use this comment or to opt for non-psych (the psych-reading of the whole sentence would arise from a metaphoric reading not only of the verb but the whole VP or sentence then). If a psych reading is possible, annotate it.¹⁸

psych-related experiencer combined with a dative maleficiary:

(190) Der Nord [...] **verwirre** den Menschen **die Sinne** [...].
 the north confuses.SBJV the.DAT humans.DAT the.ACC senses.ACC
 (NZZ_1998_05_09_a221_seg3_s8)
 The north wind confuses people's senses.

4.1.4.6 EXP-indicating_adjunct

Sometimes the experiencer is indicated using an adverbial (usually a PP) in a construction where the experiencer NP is dropped.

(191) Diese Neuerungen **behagen** naturgemäss nicht **überall**.
 these innovations please naturally not everywhere
 (NZZ_1994_11_29_a72_seg8_s3)
 Naturally, not everyone is happy with these innovations / some people have doubts about these innovations.

¹⁸ One may hypothesise that *EXP-related_object* is used with verbs having a related non-psych reading more frequently. This can be further investigated on the basis of the annotations.

(192) Sieben Spiele ohne Sieg **nerven** halt auch **in der eher beschaulichen**
seven games without win bother simply also in the rather calm

Bremer Fussballszene.

Bremen football scene (NZZ_1996_12_09_a134_seg3_s23)

Even in Bremen's rather calm football scene, people are annoyed after a streak of seven games without a win.

4.1.4.7 reciprocal

The experiencer NP is a reciprocal pronoun.

(193) " Lehrer und Schüler **ärgern sich gegenseitig** [...].

teachers and pupils annoy REFL mutually

(NZZ_1999_06_11_a157_seg10_s14)

Teachers and pupils annoy one another.

4.1.4.8 resultative_object

The direct object is not the direct experiencer but the result of the experiencer's reaction towards the stimulus. Typically, the experiencer is somehow indicated at in the object NP, but this is not obligatory.

(194) Vorerst **haben** die "Fairen" **Kritik** **der** "Gerechten" **provoziert**.

for.now have the.NOM fair.NOM criticism.ACC the.GEN just.GEN provoked

(NZZ_1997_03_19_a51_seg4_s12)

For now, the "fair ones" have provoked criticism from the "just ones".

4.1.5 other

4.1.5.1 non-phoric_es

There is a non-phoric *es* in the EO-verb's clause.

(195) **Es gefällt** uns nicht, dass der Staat deren Aufgaben übernommen hat.

it pleases us.DAT not that the state their tasks taken.over has.

(NZZ_1993_01_28_a54_seg9_s13)

We do not like it that the state has taken over their tasks.

4.1.5.2 pronominal_adverb

Instead of a stimulus PP a corresponding pronominal adverb is used.

(196) Celine würde sich **darüber** vermutlich nicht einmal **ärgern**.
Celine would REFL about.this presumable not even annoy
(NZZ_1994_03_09_a104_seg5_s16)
Celine presumably would not even be annoyed by this.

4.1.5.3 result_PP

There is a PP that indicates a result state. Not to be used with instances of 2.11 X-CAUS_V_Y-EXP_PP, where the result state clearly emerges from the pattern.

(197) " Wir **langweilten** uns **ins Delirium**. "
we bored REFL into.the delirium (NZZ_1998_04_22_a160_seg3_s16)
We were bored out of our minds.

4.2 Misc

Additional observations and (personal) comments by the annotator that are not reflected in the current guidelines. With ambiguous examples, one can use Misc to indicate the reading not annotated.

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6 List of Verbs

Verb	case	sample_size
amüsieren,'to amuse'	acc	200
anekeln,'to sicken'	acc	20
ängstigen,'to frighten'	acc	109
anwidern,'to disgust'	acc	32
ärgern,'to anger'	acc	200
auffallen,'to strike'	dat	200
aufstoßen,'to strike (neg.)'	dat	200
aufwühlen,'to stir up'	acc	117
ausreichen,'to suffice'	dat	200
bedrücken,'to distress, depress'	acc	87
beeindrucken,'to impress'	acc	200
befremden , 'to alienate'	acc	177
begeistern,'to thrill, enthuse'	acc	200
behagen,'to please'	dat	200
bekümmern,'to concern, chagrin'	acc	60
beruhigen , 'to calm'	acc	200
beschämen,'to shame'	acc	65
beunruhigen,'to worry'	acc	200
bewegen,'to move'	acc	200
bezaubern,'to charm'	acc	138
deprimieren,'to depress'	acc	60
einleuchten,'to be evident'	dat	200
einschüchtern,'to intimidate'	acc	200
ekeln,'to disgust'	acc	23
empören,'to outrage'	acc	200
entmutigen,'to discourage'	acc	200
entzücken,'to delight'	acc	190
erfreuen,'to enjoy, delight'	acc	200
erheitern , 'to cheer, brighten'	acc	59
erschrecken , 'to startle'	acc	200
faszinieren,'to fascinate'	acc	200
freuen,'to please, be glad'	acc	200
frustrieren,'to frustrate'	acc	125
gefallen,'to like'	dat	200
genügen,'to suffice'	dat	200
guttun,'to benefit, comfort'	dat	200
imponieren,'to impress'	dat	200
interessieren,'to interest'	acc	200
irritieren,'to irritate, confuse'	acc	200
langweilen,'to bore'	acc	200
leidtun,'to feel sorry'	dat	200
missfallen,'to displease'	dat	200
nahegehen,'to afflict, upset'	dat	29
nerven,'to bother'	acc	141
peinigen , 'to tantalise'	acc	85
plagen , 'to plague'	acc	200
provizieren,'to provoke'	acc	200
quälen,'to torment'	acc	200

schmeicheln,'to flatter'	dat	200
schockieren,'to shock'	acc	200
schwerfallen,'to find difficult'	dat	200
stören, 'to disturb, bother'	acc	200
überfordern,'to be too much, overwhelm'	acc	200
verängstigen,'to frighten'	acc	36
verärgern,'to annoy'	acc	200
verblüffen,'to flabbergast'	acc	200
verschrecken,'to scare'	acc	58
verstören,'to distract, distress'	acc	52
verwirren , 'to confuse'	acc	200
verwundern, 'to astonish'	acc	200
widerstreben,'to oppose, have an aversion'	dat	76
wundern, 'to wonder'	acc	200
zermürben,'to demoralize, grind'	acc	152
zusetzen,'to badger, harass'	dat	200

['stʌdi:z 'ɪn lɪŋ'ɡwɪstɪks ənd
lɪŋ'ɡwɪstɪk 'deɪtə 'saɪəns]

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Volume 4

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