

On *v* and Voice: German Medium verbs and their nominalizations

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1 Data

Data source: 50 non-prefixed *-ung* nominalizations manually identified in a cleaned and parsed version of the deWaC corpus (Baroni et al. [2009]). Prime example: *Die Wirkung der Tablette* (“the effect of the pill”). I call the base verbs of these *-ung* nominalizations ‘Medium Verbs’ (MV) and their nominalizations ‘Dispositional Nominalizations’ (DN).

1.1 Perfect auxiliary selection

Like unergatives (1a), MVs select *haben* as an auxiliary in perfect formation (1b)-(1d).

- (1) a. *Peter hat gesungen.*
Peter have.AUX sing.PRES.PERF
b. *Die Tablette hat gewirkt.*
the pill have.AUX take effect.PRES.PERF
c. *Die Wunde hat geblutet.*
the wound have.AUX bleed.PRES.PERF
d. *Das Uran hat gestrahlt.*
the uran have.AUX radiate.PRES.PERF

1.2 Impersonal Passive

Unlike unergatives (2a) but like unaccusatives (2b), no impersonal passive can be formed (2c)-(2e)

- (2) a. *Es wurde gesungen.*
it be.AUX.PASS sing
b. **Es wurde gebrochen.*
it be.AUX.PASS broken
c. **Es wurde gewirkt.*
it be.AUX.PASS taken effect
d. **Es wurde geblutet.*
it be.AUX.PASS bleed
e. **Es wurde gestrahlt.*
it be.AUX.PASS radiate

1.3 No middles

Unlike unergatives (3a), no middle construction is possible (3b)-(3d)

- (3) a. *Das Lied singt sich leicht.*
the song sings REFL easily.
b. **Die Tablette wirkt sich leicht.*
The pill takes effect REFL easily.
c. **Die Wunde blutet sich leicht.*
The wound bleeds REFL easily

- d. **Das Uran strahlt sich leicht.*
The uran radiates REFL easily.

1.4 Adjectival use of the perfect participle

Like unergatives (4a), no adjectival use of the perfect participle is possible (4b) - (4d)

- (4) a. **Der gesungene Peter*
the sung Peter
b. **Die gewirkte Tablette*
the effected pill
c. **Die geblutete Wunde*
the bled wound
d. **Das gestrahlte Uran*
the radiated uran

1.5 Resultative constructions

Unlike unergatives (5a), a reflexive in object position does not allow for a resultative construction (5b)-(5d)

- (5) a. *Peter sang sich heiser.*
Peter sang REFL hoarse.
b. **Die Tablette wirkte sich gesund.*
The pill took effect REFL healthy.
c. **Die Wunde blutete sich voll.*
The wound bled REFL full.
d. **Das Uran strahlte sich tot.*
The uran radiated REFL dead.

Unlike unaccusatives (6a), no resultative construction is possible (6b)-(6d), (7a)-(7d)

- (6) a. *Die Schachtel brach auf.*
The box broke open.
b. **Die Tablette wirkte aus.*
The pill took effect out.
c. **Die Wunde blutete aus.*
The wound bled out.
d. **Das Uran strahlte tot.*
The uran radiated dead.

- (7) a. *Peter brach die Schachtel auf.*
Peter broke the box open.
- b. **Die Tablette wirkte den Patienten gesund.*
The pill took effect the patient healthy.
- c. **Der Metzger blutete das Tier aus.*
The butcher bled the animal out.
- d. **Das Uran strahlte den Arbeiter tot.*
The uranium radiated the worker dead.

But: a dispositional “result state” can be diagnosed with a dispositional adjective

- (8) a. *Die Tablette wirkte tödlich.*
The pill took effect lethally.
- b. *Die Wunde blutete gefährlich.*
The wound bled dangerously.
- c. *Das Uran strahlt gefährlich.*
The uranium radiated dangerously.

That no result state can be diagnosed suggests that MVs are “mono-eventive”.

1.6 Nominalization

Unlike unergatives (9a) but like unaccusatives (9b), eventive *-ung* nominalizations can be formed (9c)

- (9) a. **Die Singung des Lieds*
The sing.UNG the.GEN song
- b. *Die häufige Fütterung des Löwen*
The frequent feed.UNG the.GEN lion
- c. *Die konstante Wirkung der Tablette*
The constant effect.UNG the.GEN pill

- Formation of event nominalizations: “It has been noted in the literature that across languages event nominals are [...] derived from unaccusative predicates, but not from unergative ones” [Alexiadou, 2001, p.78]
- Formation of German *-ung* nominalizations: “*-ung* formation constraint: a verbal construction has an *-ung* nominalization if and only if the verb is constructed bi-eventively.” [Roßdeutscher, 2010, p. 106].

1.7 Genitive interpretation in nominalization

Unlike *-ung* nominalizations formed from unaccusatives no theme interpretation of the genitive adjunct is possible.

- (10) a. *Die Wirkung der Tablette*
The effect.UNG the.GEN pill
(**durch-PP*) wird behindert.
(**by-PP*) is hampered.
- b. *Die Blutung der Wunde*
The bleed.UNG the.GEN wound
(**durch-PP*) wird gestoppt.
(**by-PP*) is stopped.
- c. *Die konstante Strahlung des Urans* (**durch-PP*)
The constant radiate.UNG the.GEN uranium (**by-PP*)

- The genitive adjuncts have argument status because the nominalizations have a complex event reading as shown by the possibility of aspectual modification according to Grimshaw [1990], Ehrich and Rapp [2000]: *behindern*, *stoppen*, *konstant* select for complex events.
- No theme interpretation of the genitive adjunct is possible and no agent or causer can be introduced with a *durch-PP*, contra lexicalist predictions Ehrich and Rapp [2000], Solstad [2010], Bücking [2012].
 - Event (telic) *-ung* nominalizations allow only for the theme theta role, process (atelic) nominalizations allow also for the agent theta role [Ehrich and Rapp, 2000, cf. p. 268]
 - For telic base verbs of *-ung* nominalizations the genitive relation is preferably interpreted as theme, atelic base verbs allow for theme and agent interpretation of the genitive relation [Bücking, 2012, cf. p. 171]

1.8 Productivity

-ung formation from MVs is productive as exemplified in (11)

- (11) a. *Für mein Brot mache ich eine Kühltisch“Gehung” über Nacht.*
for my bread make I a fridge-prove.UNG over night

<http://bfriends.brigitte.de/foren/rezeptideen/55358-was-kocht-und-backt-ihr-zu-ostern-6.html>

2 Dispositions

Inspiration for my analysis: Ryle [1949]’s analysis of *to hibernate* and its nominalization *hibernation* as dispositions. Ryle argued that dispositions are “inference-tickets, which license us to predict, retrodict, explain and modify [...] actions, reactions and states. .” [Ryle, 1949, p. 124]. I propose an analysis of MVs and DNs

at the syntax-semantics interface in which events are inferred from the instantiation of dispositional properties. NB: (12a) - (12c) are English DNs but I focus on German data in the following.

- (12) a. The hibernation of the bear (*by-PP) was interrupted
 b. The constant ulceration of the wound (*by-PP)
 c. The constant vibration of the car (*by-PP)

A disposition can be defined as follows:

- x has the disposition to p if C iff it would p if C were the case. (Simple Conditional Analysis (SCA) of Dispositions, Choi [2012])

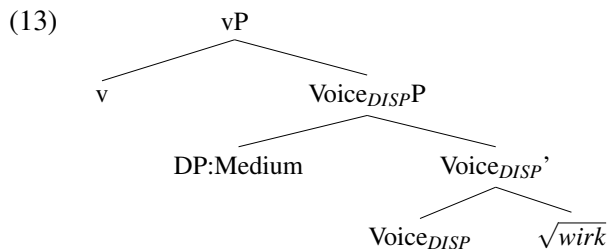
Dispositions fall square within the distinction between unergative and unaccusative verbs when this distinction is based on the different role that the DP argument of these verbs realizes:

- Unergative verbs: DP argument is an agent/causer
- Unaccusative verbs: DP argument is a theme/patient

The bearers of dispositions, I call them the 'Medium' of the disposition, are neither exclusively agents nor themes. In the realization of a disposition, a Medium has both properties of the proto-agent and the proto-theme (Dowty [1991]). On the one hand, a pill "causes an event or change of state in another participant" – the effect of the pill – on the other hand, a pill is "causally affected by another participant" – it takes effect only when ingested. That is, a Medium argument is external to the disposition property but internal to the instantiation of the disposition as an event. Making precise the connection between these two roles of Medium argument at the syntax-semantics interface is the goal of this paper.

2.1 Syntax of medium verbs and their nominalizations

The syntactic structure that I propose for Medium verbs such as *wirken* is the one given in (13).

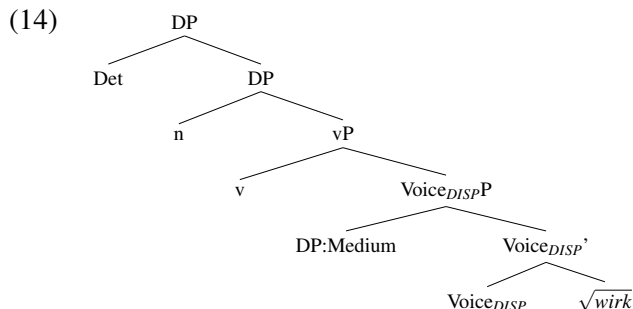


Medium theta role is defined as follows:

- The Medium theta role is assigned to DPs which are in the specifier of Voice *and* in the specifier of the complement XP of vP.

Under the assumption that in "a 'pervasive syntax' ap-

proach to morphologically complex forms, like that of Distributed Morphology, the analysis and structures proposed for a form must also be contained within the analysis of any structure derived from that form" [Harley, 2009, p.320], the DN *-ung* nominalization of a MV has an analysis as in (14)

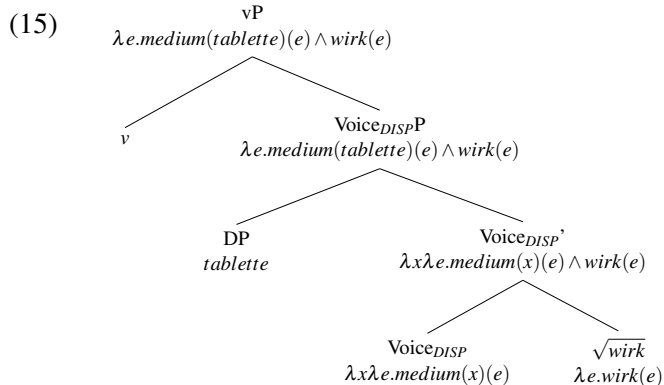


(13) and (14) get most of the syntactic issues involved in the data right:

- Selection of *haben* as an auxiliary in perfect formation is predicted by the occurrence of Voice
- No impersonal passive and no middles for MVs because Voice has already been determined as dispositional
- No agent/causer introduction with *durch*-PPs in the *-ung* nominalization because the external argument position is already occupied

2.2 Semantics of medium verbs and their nominalizations

First attempt at a compositional semantics for Medium verbs, employing Kratzerian event identification Kratzer [1996].



(15) gets the remaining issue in the data right:

- But: what is the *semantic* contribution of little *v* besides its syntactic function of determining the theta role of the DP? Shouldn't we just omit *v* in the analysis? What are the semantic properties of MVs and their nominalizations which make them obviously contradict the predictions in the literature? In the next section I want to provide a semantics for little *v* that provides an analy-

sis of MVs and their *-ung* nominalizations that makes MVs and DNs fit into the picture of the semantics that has been devised for mono-eventive and bi-eventive verbs, adopting Roßdeutscher [2010]’s interpretation of Marantz [2005] conception of mono-eventivity and bi-eventivity. In a mono-eventive construction, ν selects for an atelic event type whereas in a bi-eventive construction, ν selects for a state-denoting XP. The semantics for ν that I develop in the following combines both semantic construction types in a “Medium construction type”, in that ν selects for a disposition-denoting XP as an atelic event type.

2.3 The semantics of little ν in Medium constructions

The semantic characterization of the Medium theta role is to be the medium of a disposition, but what is a disposition? Recall the SCA analysis:

SCA x has the disposition to p if $C \leftrightarrow x$ would p if C were the case.

This biconditional characterizes a disposition as a property (the left hand side, SCA-L) standing in a biconditional relation with a counterfactual event (the right hand side, SCA-R):

SCA-L $\lambda x \lambda p. \text{wirken}(p) \wedge \text{medium}(p)(x) \equiv x$ would take effect if C were the case (a property).

SCA-R $\lambda x \lambda e. \text{wirken}(e) \wedge \text{medium}(e)(x) \equiv x$ has the disposition to take effect if C (a dispositional event?).

But something is strange with SCA-R: Medium verb dispositions are necessarily instantiated by their triggering conditions: a vase that is fragile can break when shattered but a pill takes effect when ingested. Thus, the dispositions expressed by MVs are not “easy possibilities” in the sense that adjectival *fragile* means “can break easily” (Vetter [forthcoming]): verbal *to take effect* does not mean “can take effect easily” but “does take effect if C ”. NB: This is also why MVs are distinct from ability modals. There are no “dispositional events” but only events which result from the instantiation of a disposition. Thus the correct formulation of the right hand side of the SCA for MVs is SCA-R’:

SCA-R’ $\lambda x \lambda e. \text{wirken}(e)(x) \wedge \text{medium}(x) \equiv x$ takes effect if C (an event).

Furthermore, dispositions can only be instantiated once, and once they are instantiated, they result in complex events. I use linear logic implication \multimap and the dynamic box operator $\boxed{}$ (semantically representing a necessary causal accessibility relation between possible worlds) to model the causal relation between MV dispositions and MV events (see e.g. Steedman [2002] for an overview).

Example: if something is shut and you push it, it becomes open: $\text{shut}(x) \multimap [\text{push}(x)]\text{open}(x)$, . Once you apply the rule, the proposition in question is “used up”. Applied to dispositions, this means that the ingestion of a pill leads you from a state in which the pill has the dispositional property to take effect if ingested to a state of affairs in which the pill takes effect. Formally, this can be represented as in (16), employing a Lewis-style analysis of counterfactuals (Lewis [1973]).

- (16) a. $(\lambda p. \text{medium}(\text{tablette})(p) \wedge (\text{ingest}(\text{tablette}) \boxed{\multimap} \text{wirk}(p))) \multimap [\text{ingest}(\text{tablette})]$
 $(\lambda e. \text{medium}(\text{tablette})(e) \wedge \text{wirk}(e)).$
 b. “If a pill would take effect if it were ingested then, when it is ingested it takes effect.”

A general proposal for an instantiation scheme for dispositions that introduces events is given in (17).

- (17) a. $(\lambda p. \text{medium}(x)(p) \wedge (C \boxed{\multimap} Q(p))) \multimap [C](\lambda e. \text{medium}(x)(e) \wedge Q(e)).$
 b. “If a medium would p if it were the case that C then, when C it ps .”

2.4 Semantic construction for Medium Verbs

I propose that Medium Verbs are ontologically different from their nominalizations in that Medium Verbs denote events (i.e. instantiations of dispositions) whereas their nominalizations denote uninstantiated dispositions. Then, the function of little ν in verbal constructions is to identify the disposition predicated of the medium as denoting an event when instantiated, i.e. iff $[C]$ is applied to the dispositional property. This leads to a semantics of ν in which ν derives a mono-eventive structure in that ν instantiates a disposition as an atelic event but ν derives also a bi-eventive structure in that ν selects a disposition (roughly corresponding to a property/state) denoting XP (i.e. $\text{Voice}_{\text{Disp}}\text{P}$). This is in accordance with the prediction on *-ung* formation made by Roßdeutscher [2010]. Voice identifies the Medium of the dispositional property instead of the agent of an event but disposition identification is parallel to Kratzerian event identification. NB: There are other options for the semantics of ν , e.g. that ν does not instantiate the disposition but that this is done by e.g. Tense or modifiers. I won’t explore these other options here. I propose: Medium verbs have a bi-eventive construction which is selected by ν as an atelic event type via disposition instantiation, i.e. they have a Medium construction as in (19).

2.5 Semantic construction for Dispositional Nominalizations

Again, for DNs, two options for the semantics of v seem possible; either v instantiates the disposition or not. I propose that in DNs, the disposition is not instantiated but the semantics of DNs “waits” for C to be contextually supplied at a level above DP as part of a selection restriction for a complex event. This would rehabilitate the generalization of Alexiadou [2001] as DNs are not eventive because they have a medium construction in which the disposition is not instantiated. Again, there are other options available, e.g. that v instantiates the event also in DNs, but I am uncertain about which tests actually could tell about the instantiation of dispositions. Data as in (18) suggests that in nominalizations, v does not instantiate the dispositions. In (18a)), no event seems to be introduced by *Wirkung* on its own and that is why the localization of an event fails. But once the disposition denoted by *Wirkung* is explicitly instantiated as in (18b)), the event can be localized. However, I consider the diagnosis of event denotation an open research question, see Pross [2013].

- (18) a. ?*Die Wirkung der Tablette fand*
the effect.UNG the.GEN pill took
sofort statt.
immediately place
b. *Die Wirkung der Tablette*
the effect.UNG the.GEN pill
trat sofort ein.
occured immediately

3 Summary and Outlook

- I proposed an analysis of a class of strictly intransitive German verbs and their *-ung* nominalizations in which the argument position bears Medium theta status in that it conflates a combination of proto-agentive and proto-thematic properties in a dispositional property.
- I argued that dispositions are coded syntactically and realized semantically in a setting where v selects for a disposition denoting $\text{Voice}_{\text{Disp}}^{\text{P}}$ as an atelic event.
- I expect that other languages than German also have MVs and DNs (cp. the English data in (12a)-(12c)).
- A note on the no agent-idioms hypothesis: there are no agent-idioms but it seems as if there are medium-idioms. Possible fillers of the argument slot of medium verbs are highly restricted: only

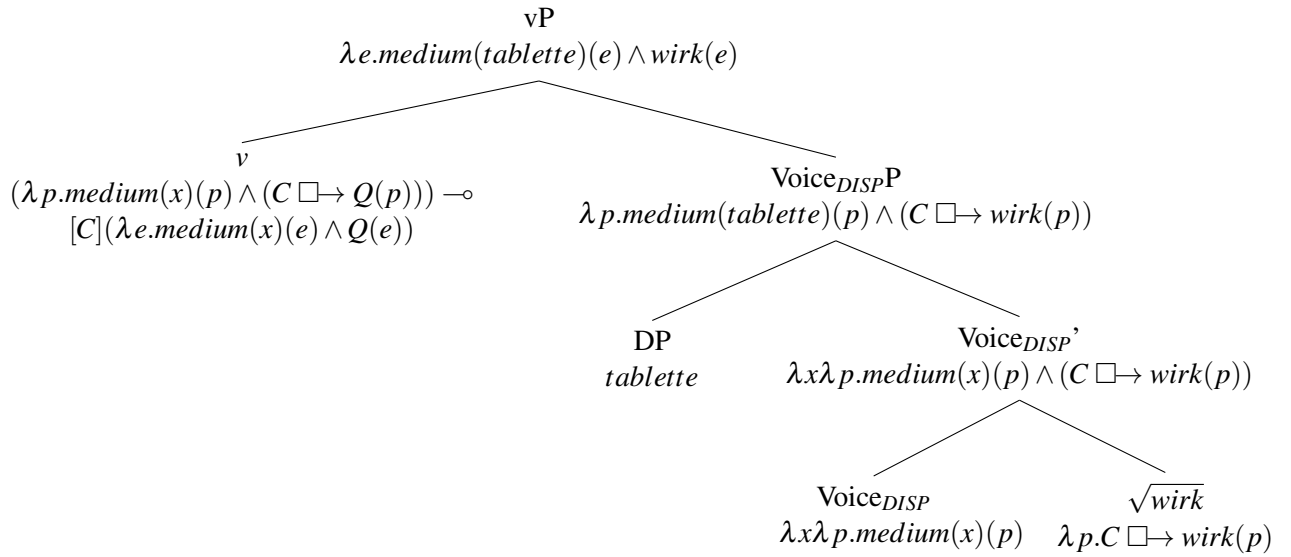
wounds bleed in the literal sense. But if my heart bleeds because of lovesickness, this leads to a special meaning of *to bleed*. Thus it seems as if the domain of special meaning for Dispositional Voice includes the Medium argument.

- MVs and DNs support the view that Voice is a causal head which is responsible for the encoding of causality in natural language and that v is a categorizer for event-denoting verbs.

References

- Artemis Alexiadou. *Functional Structure in Nominals. Nominalization and Ergativity*. John Benjamins, 2001.
- M. Baroni, S. Bernardini, A. Ferraresi, and E. Zanchetta. The wacky wide web: A collection of very large linguistically processed web-crawled corpora. *Language Resources and Evaluation*, 43(3):209 – 226, 2009.
- Sebastian Bücking. *Kompositional flexibel. Partizipanten und Modifikatoren in der Nominaldomäne*. Stauffenburg, Tübingen, 2012.
- Sungho Choi. Dispositions. In Edward N. Zalta, editor, *The Stanford Encyclopedia of Philosophy*. Spring 2012 edition, 2012. URL <http://plato.stanford.edu/entries/dispositions/>.
- David Dowty. Thematic proto-roles and argument selection. *Language*, 67(3):547 – 619, 1991.
- Veronika Ehrich and Irene Rapp. Sortale Bedeutung und Argumentstruktur: *ung*-Nominalisierungen im Deutschen. *Zeitschrift für Sprachwissenschaft*, 19(2):245 – 300, 2000.
- Jane Grimshaw. *Argument Structure*, volume 18 of *Linguistic Inquiry Monographs*. MIT Press, 1990.
- Heidi Harley. The morphology of nominalizations and the syntax of vp. In Anastasia Giannakidou and Monika Rathert, editors, *Quantification, Definiteness, and Nominalization*. Oxford University Press, 2009.
- A Kratzer. Severing the external argument from its verb. In Johan Rooryck and Laurie Ann Zaring, editors, *Phrase Structure and the Lexicon*, pages 109 –137. Kluwer Academic Publishers, Dordrecht, 1996.
- David Lewis. Counterfactuals and comparative possibility. *Journal of Philosophical Logic*, 2:418 – 446, 1973.
- Alec Marantz. Objects out of the lexicon: Objects as events. Handout, June 2005.
- T. Pross. Dealing with sortal ambiguity of nominalizations by underspecification. In A. Roßdeutscher, editor, *Ontology and Argument Structure*, volume 10 of *SinSpec (Working Papers of the SFB 732)*, pages 1–23. University of Stuttgart, 2013.
- Antje Roßdeutscher. German *-ung*-formation. An Explanation of Formation and Interpretation in a Root-Based Account. *Linguistische Berichte*, Sonderheft 17:101 –132, 2010.
- G. Ryle. *The concept of mind*. University of Chicago Press, 1949.
- Torgrim Solstad. Post-nominal genitives and prepositional phrases in german: A uniform analysis. In Artemis Alexiadou and Monika Rathert, editors, *The Syntax of Nominalizations across Languages and Frameworks*, pages 219 – 251. de Gruyter, Berlin, 2010.
- M. Steedman. Plans, affordances, and combinatory grammar. *Linguistics and Philosophy*, 25(5):723 – 753, 2002.
- Barbara Vetter. Dispositions without conditionals. *Mind*, forthcoming.

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