On the natural language metaphysics of dispositions

Tillmann Pross, IMS University of Stuttgart, prosstn@ims.uni-stuttgart.de

Introduction While dispositions have been appealed to in many areas of philosophy, the ontological status of dispositions is subject to controversial debate. In this paper, I approach the question for the ontological status of dispositions from the point of view of natural language metaphysics in the sense of [1, p. 573], i.e. to figure out what "kinds of things and relations among them does one need in order to exhibit the structure of meanings that natural languages seem to have". I argue for the linguistic reality of dispositions in that dispositions are the referential objects of a class of verbs which I call Medium verbs (MV) and their nominalizations which I call dispositional nominalizations (DN), examples of which are *wirken - Wirkung* (to take effect), *bluten - Blutung* (to bleed), *to ulcerate - ulceration*, *to hibernate - hibernation*. I derive my argument for the linguistic reality of dispositions from the way in which MVs and DNs challenge a central linguistic generalization concerning the realization of causality in the verbal domain, the so-called unaccusativity hypothesis [2]. This hypothesis pertains to a distinction between two types of causality in intransitive verbs: (a) unergative verbs, where the DP argument is an agent/causer and (b) unaccusative verbs, where the DP argument is a theme/patient and behaves like the object of a transitive verb. The underlying binary distinction between the internal causality realized by agents and causers and the external causality realized by themes or patients that is central to the unaccusativity hypothesis is borne out by linguistic tests such as auxiliary selection in perfect formation or the formation of impersonal passive constructions.

Data Like German unergatives, German MVs select *haben* as an auxiliary in perfect formation (1). Unlike German unergatives but like German unaccusatives, no impersonal passive can be formed (2). Unlike German unergatives, no middle construction is possible for German MVs (3). Unlike unaccusatives, no resultative construction is possible (4), (5) and unlike unergatives, the insertion of a reflexive in object position does not license a resultative construction (6), (7). Dispositional result states, however, are acceptable (8). Like German unergatives, no adjectival use of the perfect participle is possible for German MVs (9). Unlike unergatives but like unaccusatives event nominals can be formed (11) and unlike nominalizations derived from unaccusative verbs, no theme interpretation of the genitive argument is possible and no agent or causer can be introduced with a *durch-* resp. *by*-PP (cf. "across languages event nominals are, when derived from transitive predicates, 'passive' and not transitive and that they are derived from unaccusative predicates, but not from unergative ones" [3, p.78]), where argument status of the genitive is testified by the possibility of aspectual modification ([4]).

(1) *Die Tablette hat gewirkt.*
the pill have.AUX take effect.PERF

(2) **Es wurde gewirkt.*
it be.AUX.PASS take effect.PERF

(3) **Die Tablette wirkt sich leicht.*
The pill take effect REFL easily.

(4) **Die Tablette wirkt aus.*
The pill take effect out.

(5) **The wound ulcerated out.*

(6) **Die Tablette wirkt sich gesund.*
The pill take effect REFL healthy.

(7) **The wound ulcerated itself infected.*

(8) *Die Tablette wirkt tödlich.*
The pill take effect lethally.

(9) **Die gewirkte Tablette*
the take effect.PERF pill

(10) *Die konstante Wirkung der*
The constant effect.UNG the.GEN
Tablette (*durch-PP)
pill (*by-PP)

(11) The constant ulceration of the wound (*by-PP)

Discussion According to the tests in (1)-(11), MVs escape the unaccusativity hypothesis and DNs behave contrary to expectations about the formation and argument structure of deverbal nominalizations. The argument of a MV is neither proto-agentive nor proto-thematic ([5, p. 572]): as an argument of *wirken*, 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 pill has the disposition to take effect when ingested. Inspired by [6]'s discussion of the English MV *to hibernate*, I propose that the argument position of MVs semantically realizes a medium in which a disposition resides

which is instantiated when appropriate triggering conditions take effect. Semantically, dispositions fall square within the distinction between unergative and unaccusative verbs when this distinction is based on the different semantic role that the DP argument of these verbs realizes. Because the bearers of dispositions are neither exclusively agents nor themes but conflate proto-agentive and proto-thematic properties, the binary distinction between external and internal causality underlying the unaccusativity hypothesis is not able to capture the type of conditional causality which is relevant to dispositions. MVs and DNs are not only challenging to existing linguistic theories of argument structure but MVs and their DNs are also challenging to philosophical approaches to the explanation of dispositions which have focused on dispositions expressed by adjectives such as *fragile*. Unlike adjectival dispositions, the disposition of a pill to take effect when ingested is not characterized by a possibility (i.e. a fragile vase *can* break when shuttered) but by a necessity (i.e. a pill *does* take effect when ingested). Different from adjectives, verbs 'hard-code' causal relations (e.g. the causal relation between triggering and instantiation of a disposition) and thus dispositions are necessarily instantiated as events by conditionals in which trigger and disposition are not causally separated. Instead, causal separation of triggers from dispositions requires a counterfactual such as *would take effect when ingested*. I propose that the general form of a (de)verbal disposition is a biconditional between a counterfactual event description and a verbal disposition description: *If a pill would take effect if it were ingested then, when it is ingested, it takes effect.*

Proposal I propose an analysis of MVs and DNs at the syntax-semantics interface along [7], where a Medium theta role is assigned to DPs which are in the specifier of Kratzerian Voice (i.e. Agent) *and* in the specifier of the complement XP of vP (i.e. Theme), thus capturing the intuition about the conflation of agentive and thematic properties in the argument of MVs. A semantic analysis of MVs is proposed that makes use of linear logic implication $\multimap$ and the dynamic box operator $[\ ]$ (semantically representing a necessary causal accessibility relation between possible worlds) to model the causal relation between nominal dispositions and verbal events (see e.g. [8] for an overview), i.e. that the ingestion of a pill leads from a state in which the pill has the dispositional property to take effect if ingested (= a property) to a state of affairs in which the pill takes effect (= an event). Formally, I propose to represent the semantics of MV and DN dispositions as a variant of the simple conditional analysis of dispositions, employing a Lewis-style analysis of counterfactuals as in (12). The data in (1)-(11) is explained at the syntax-semantics interface with (12) by the fact that events are denoted by DNs and MVs only if the underlying disposition is explicitly instantiated (e.g. by adverbial modifiers, selection restrictions, tense/aspect).

(12) $(\lambda p.medium(tablette)(p) \wedge (ingest(tablette) \,\square\!\!\rightarrow wirk(p))) \multimap [ingest(tablette)]$
$(\lambda e.medium(tablette)(e) \wedge wirk(e)).$

Summary In this paper, I present linguistic evidence for the ontological reality of dispositions as objects of reference that are necessary to the analysis of a class of intransitive verbs which escape the unaccusativity hypothesis and their nominalizations. I discuss how from both a philosophical and a semantic point of view, the type of conditional causality expressed by (de)verbal dispositions is challenging, in particular with respect to established linguistic theories of causality and argument structure and established philosophical theories about adjectival dispositions. I discuss linguistic tests for (de)verbal dispositions, arguing that dispositions are instantiated by tests for eventivity rather than selected and carve out the major differences between dispositions denoted by adjectives and dispositions denoted by verbs and nominalizations, among others, with respect to the way in which ability modals and finks relate to (de)verbal dispositional properties resp. events that result from the instantiation of a (de)verbal dispositional property.

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