33

REFERENCE TO PROPERTIES IN NATURAL LANGUAGE

Friederike Moltmann

33.1   Introduction

How exactly does natural language permit reference to properties, and what notions of a property does it permit reference to? These are questions of descriptive metaphysics, more specifically natural language ontology. When such questions are pursued, further, me-taontological questions arise, namely how notions of a property that are implicit in the ontology of natural language relate to the 'technical' notions of a property that figure in philosophy and formal semantics. We will see that there are significant discrepancies which raise questions about a core-periphery distinction in the ontology of natural language, with core ontology being part of universal grammar.

There a range of potential property-denoting expressions in natural language (or at least English). First, there are 'quality terms' (as I will call them) like *wisdom* as well as explicit property-referring terms like *the property of being wise*. Furthermore, infinitival clauses and gerunds such as *to be wise* and *being wise* have been regarded as property-referring terms by several semanticists. It is also a common view that predicates like *(is) wise* stand for properties (though perhaps not in the sense of referring to them). Finally, the view has been held that 'special quantifiers' such as *something* when they take the place of infinitival clauses, gerunds, or predicative adjectival or nominal phrases serve as quantifiers ranging over properties.

In this chapter, I will first briefly go through those apparent property-referring terms and some of the views that have been held about them. I will then focus on complex property-referring terms and present a range of new generalizations that challenge received views of properties. Those generalizations also challenge views on which property-referring terms pertain to a technical or 'philosophical' use of language and thus are not part of the core of language in a certain sense.

33.2   Natural Language Ontology

Let me start with a few more words about the context of this chapter. The questions this chapter is pursuing are questions within a particular branch of metaphysics. This is natural

language ontology, which itself is a specific branch of descriptive metaphysics as P. F. Strawson (1959) called it or what Kit Fine's (2017) calls 'naïve metaphysics'. Following Fine (but deviating somewhat from Strawson (1959), descriptive metaphysics can be taken to be the metaphysics of what there appears to be, whether such appearances correspond to something real or not. As such descriptive metaphysics differs from foundational metaphysics, which is about what there really or fundamentally is.[1] Natural language ontology can be understood as descriptive metaphysics that gives priority to linguistically reflected intuitions (over language-independent metaphysical intuitions) by making full use of the methods of contemporary semantic and syntactic theory. The subject matter of natural language semantics is the ontology that we *implicitly accept* when using natural language. While natural language can be used to formulate all sorts of metaphysical views, that use is generally not taken to be evidence for the ontology we implicitly accept when using natural language; only non-technical parts of language and ordinary ~~use is~~ evidence for that ontology, that is, only the core of language not its periphery, in an ontologically relevant sense.[2]

33.3   Apparent Property-Referring Terms

There are various candidates for property-referring terms in English that have been discussed in the literature. One of them is terms like *wisdom, happiness,* and *redness* that is, bare (determiner-less) adjective nominalizations. They figure centrally in the Aristotelian tradition of the metaphysics of qualities and thus can be called 'quality terms'. Quality terms, as we will see shortly, differ sharply in their semantic properties from 'explicit property-referring terms' such as *the property of being wise, the property of being happy*, and *the property of being red.*

Quality terms also include complex noun phrases (NPs) like *the quality of wisdom* and *the virtue of humility,* which, even though they share the same construction as explicit property-referring terms, side with quality terms rather than explicit property-referring terms ~~semantically~~.

The semantics of quality terms that are bare adjective nominalizations is best understood in terms of correlating NPs that refer to particulars, namely adjective nominalizations with a complement or specifier as in (1a) and (1b):

(1) a. Socrates' wisdom
   b. the beauty of the landscape

Those NPs are standardly taken to be trope-referring terms, or to use the more appropriate term, mode-referring terms.[3] Their denotations display the characteristic properties of modes (or tropes):

1 Properties of concreteness such as being perceivable, being relata of causal relations (*Joe noticed Mary's happiness, Joe's nervousness caused him to forget the problem*)
2 Bearer-dependence (*Socrates' wisdom is Plato's*, which expresses identity, is false, as opposed to *Socrates' wisdom is the same as Plato's*, which expresses similarity and could be true)
3 Location in time (but not directly in space, cf. Moltmann ~~MS)~~ (*John's happiness lasted two years,*?? *John's happiness is in Munich (where John is)*)[4]

4 Similarity relations based on instantiating the same property (*Socrates wisdom is the same as Plato's wisdom*, *the beauty of this landscape is the same as the beauty of that landscape*).

The modes referred to by such terms behave just as the instances of the qualities that quality terms stand for, given the particular readings quality terms display with different predicates. Quality terms differ from explicit property-referring terms in that they show different readings or different degrees of acceptability with respect to five types of predicates. In fact, they show the particular readings typical with bare mass nouns and plurals in general (e.g., *water* and *giraffes*), which have been argued to always denote kinds by Greg N. Carlson (1980, see Moltmann 2004, 2013a: ch. 2). First, with existence predicates they exhibit a reading existentially quantifying over instances (i.e., modes), as in (2a), rather than stating the existence of a property as an abstract object, as in (2b):

(2) a. Wisdom exists
   b. The property of wisdom exists

Second, with episodic predicates (or what Carlson (1980) called 'stage-level' predicates), they display existential quantification over instances, as in (3a) rather than the application of the predicate to an abstract property object, as in (3b) (which is semantically deviant unless taken to hold in a metaphysical fantasy):

(3) a. John found wisdom
   b. ?? John found the property of wisdom

Third, with intensional transitive verbs such as *need*, quality terms trigger existential quantification over instances in situations satisfying the need, as in (4a), whereas the abstract property needs to be present in such situations with explicit property-referring terms, as in (4b):

(4) a. Mary needs wisdom
   b. Mary needs to property of being wise

Fourth, with characterizing predicates (or what ~~Carlson~~ Carlson (1980) called 'individual-level predicates'), quality terms display a reading of generic quantification over instances, as in (5b), whereas explicit property-referring terms display a reading evaluating the abstract object as such (which is semantically deviant unless taken to hold in a metaphysical fantasy):

(5) a. Wisdom is admirable
   b. ?? The property of wisdom is admirable

Finally, frequency predicates, which count instances over time, are fine with quality terms, as in (6a), but are hardly applicable to explicit property-referring terms, as in (6b):

(6) a. True wisdom is rare
   b. ?? The property of being truly wise is rare

The readings and the applicability of the five types of predicates suggest that qualities cannot directly bear a property as a whole; only property objects can. Qualities, it seems, obtain their properties derivatively, by inheritance from their instances (modes), in the way that corresponds to a particular predicate type.[5] What does this mean for the formal ontology of qualities and properties as abstract objects? There are two options of conceiving of qualities as opposed to properties that are abstract objects:

1 Qualities are entities that cannot bear properties themselves (Moltmann 2004),
2 Qualities are (modalized) pluralities (as many) of modes (Moltmann 2013a).

On the second, more plausible option, quality terms are plural terms, more precisely modalized plural terms, plurally referring to all the actual and possible quality instances. Only explicit-property-referring terms will refer to single abstract objects.

This relates to a more general issue regarding reference to abstract objects in natural language. The common view in philosophy and linguistic semantics has been that natural language permits reference to a great range of abstract objects: properties, propositions, numbers, degrees, expression types, facts, abstract states. This view was challenged in Friederike Moltmann (2013a), where the general thesis was put forward that reference to abstract objects in natural language is highly restricted to the effect that natural language permits reference to abstract objects only in its periphery, not its core, where, roughly, the core (in the sense of natural language ontology) is understood as the ontology accepted implicitly through the use of language, whereas the ontology of the periphery is accepted on the basis of (naïve or philosophical) reflection.

Typical expressions belonging to the periphery are sortals as well as reifying terms (which are formed with sortals as head nouns). Explicit property-referring terms themselves belong to the class of reifying terms (Moltmann 2013a). Here are other examples of reifying terms in English:

(7) a. the color red
    b. the truth value true
    c. the concept horse
(8) a. the proposition that John is wise
    b. the fact that John is wise
    c. the possibility that John might be wise

The general structure of the first type of reifying terms can be taken to be: definite article followed by sortal noun followed by nonreferential(ly used) linguistic material. This structure naturally goes along with some form of abstraction or reification of an entity on the basis of a non-referential expression (with its conceptual meaning and perhaps its contexts of use). This may take the form of Fregean abstraction (Hale 1987) or a 'something-from-nothing transformation' in the sense of Stephen Schiffer (1996).

Likewise it is tempting to pursue such a semantics for the second type of reifying terms, assuming that embedded clauses are not referential terms. (8a-c) would thus involve reification yielding a proposition, a fact, or a possibility on the basis of a sentential content.

One way of pursuing such a strategy for the semantics of complex property-referring terms would be to make use of the introduction of an object (by abstraction) on the basis of

a concept or a predicate obtained by 'denominalization', imposing the following conditions on the object introduced that way:[6]

(9) [1] [*the property of being A*] is instantiated by (is had by) *d* just in case [*A*] is true of *d*.

    [2] [*the property of being A*] is identical to [*the property of being B*] iff A and B have the same meaning or application conditions.

This, however, is not the analysis I will later adopt for explicit property-referring terms. One reason is that this analysis would not conform to standard constraints on compositionality. A more important reason is that it would not be able to account for the constraints on the clausal modifier of explicit property-referring terms to be discussed later.

If the general semantics of reifying terms is the introduction of an abstract object on the basis of expressions or meanings, then reifying terms involve a form of ontological reflection (even naïve), and thus belong to the ontological periphery, not the core of the natural language. This is part of the Abstract-Objects Hypothesis of Moltmann (2013a):

(10) The Abstract-Objects Hypothesis: natural language does not involve reference to abstract objects in its core, but only in its periphery.

We will later see that the actual semantic behavior of explicit property-referring terms in fact poses a problem for their classification as part of the ontological periphery of natural language.

33.4 Predicates and Special Quantifiers like *something*

It is a common assumption that predicates stand for properties. However, there are different views of how to understand the semantic relation of 'standing for' and how to understand the properties predicates are supposed to stand for ontologically. Some philosophers hold that predicates stand to properties in a different relation than property-referring terms, by 'expressing' rather than 'denoting' them. Others take there to be an ontological difference between properties that predicates stand for and properties that property-referring terms stand for. Thus Frege took predicates to stand for concepts, unsaturated entities, rather than objects, the denotations of all referential terms (including explicit concept-referring and property-referring terms). Reference to properties as saturated objects is possible, on Frege's view, only through the use of singular terms like *the concept horse* or *the property of being wise*. While the Fregean view has a large following (Chierchia and Turner 1988; Jones 2016), there are also philosophers such as George Bealer (1982) who take predicates to stand for properties as saturated objects, with a predication relation ensuring the relation of a property to its bearer.

Certain quantifiers such as *something* as well as pronouns like *what* and *that* can take the place of predicative adjectives or nouns and thus appear to range over or stand for the very same sorts of properties that adjectives and nouns stand for:

(11) a. John is courageous.

    b. John is something admirable.

    c. Bill is that too.

(12) a. John is a father.
   b. Bill is what John is, a father.

Such quantifiers and pronouns in fact appear to act as second-order quantifiers or variables ranging over properties as predicable entities (Rayo and Yablo 2001; Wright 2007). However, there is evidence that such quantifiers instead range over first-order entities, and that those are best viewed as tropes or kinds of ~~tropes~~ (Moltmann 2013a) or abstract states (Moltmann 2004). If the quantifier SOMETHING is taken to be a two-place relational predicate applying to two predicates A and B (SOMETHING(A, B)), then the observation is that A must be a first-order predicate, but B a second-order predicate, as is the case in (13b, c):

(13) a. John is courageous.
   b. John is something admirable.
   c. John is something I like.

Admirable is a first-order predicate (**courageous is admirable*) and *like* is a first-order relational predicate, taking only individuals in its object position (**I like courageous*). Special quantifiers like *something* might instead be regarded as a nominalizing quantifier introducing a domain of entities that a corresponding nominalization would stand for ('~~happiness~~', 'fatherhood') (Moltmann 2013a: ch. 3).

33.5 Infinitival Clauses and Gerunds

Infinitival and gerundive clauses such as *to leave the party* and *leaving the party* have been argued to denote properties rather than propositions (Chierchia 1988; Chierchia and Turner 1988). One reason is the validity of the inferences below:

(14) a. John wants to leave the party.
   b. Mary wants the same thing, to leave the party / ?? for John to leave the party.
(15) a. John regretted leaving the party.
   b. Mary regretted what John regretted, leaving the party / ?? John leaving the party.

A second reason is the obligatory *de se* reading of infinitival complements of attitude verbs, which would ~~follow~~ if such complements denote properties rather propositions and attitudes *de se* consist in the self-ascription of a property (Lewis 1979):

(16) a. John hopes [to be talented]
   b. hope(John, $\lambda x[talented(x)]$)

Also gerundive clauses can provide the content of a *de se* attitude, thus motivating the same sort of analysis:

(17) John remembers being ill at the time.

If infinitival and gerundive clauses are analyzed as property-denoting, the notion of a property is that of abundant property in the sense of David Lewis (1986) or that of a

concept (as opposed to a quality) in the sense of Bealer (1982). First of all adjectives and nouns that figure in infinitives and gerunds generally may fail to stand for a sparse property (and they generally don't). Moreover, the properties denoted may be logically complex ~~and~~ quantificational:

    (18) a. being heavy or red
         b. being round and square
         c. being proud of someone
         d. being admired by everyone

Here the logical connectives and quantifiers themselves contribute to the property being denoted.[8]

33.6   Explicit Property-Referring Terms

We can now take a closer look at the semantics of explicit property-referring terms. In English explicit property-referring terms are formed with gerunds, as in (19a), although they may be formed with infinitival clauses in other languages, for example, in French, as in the French translation of (19a) in (19b):

    (19) a. the property of being wise
         b. la propriété d'être sage

Explicit property-referring terms display a notion of a property sharply distinct from the abundant notion of a property, on which every predicate in natural language, or logic, expresses a property. This is remarkable also because they are formed with gerundive or infinitival clauses, which are themselves not subject to any restrictions.

The discrepancy has nothing to do with Lewis' (1986) distinction between sparse and abundant properties or David M. Armstrong's (1978) distinction between natural and non-natural properties. Rather the notion of a property is tied to a particular notion of an abstract state – in contrast to that of a concrete state or an event.

As mentioned in Section 33.3, it is a common view that all predicates and open sentences stand for properties, representable by lambda terms, as illustrated below, making use of Donald Davidson's (1967) event semantics for verbs:

    (20) a. long or green
         b. $\lambda x[\text{long}(x) \lor \text{green}(x)]$
    (21) a. meeting a person
         b. $\lambda x[\exists e \exists y(\text{meet}(e, x, y) \mathbin{\&} \text{person}(x))]$

It is thus tempting to assume that the clausal modifier of *property* in explicit property-referring terms is to be represented by lambda terms as well, denoting a property that is to be identified with an argument of the noun *property,* as in (22b) for (22a), where 'IDENT' represents a suitable relation of identification:[9]

    (22) a. the property of being wise
         b. the d[property(d) $\mathbin{\&}$ IDENT(d, $\lambda x[\text{wise}(x)]$)]

However, such an analysis could not do justice to the constraints on the clausal modifier of *property*. Here are the generalizations.

First, *property* does not permit eventive predicates in its clausal modifier. Thus, the following examples are excluded:

(23) a. ?? the property of walking home
     b. ?? the property of writing a book
     c. ?? the property of meeting Mary

This also holds for the copula verbs *become* and *remain*, as opposed to *be*:

(24) a. the property of being sick / cancer free
     b. ?? the property of remaining sick / cancer free
     c. ?? the property of becoming sick / cancer free

Become is clearly eventive, and *remain* arguably as well, in the sense that it describes an alternative to a contextually entertained change.

The passive appears better than active eventive verbs:

(25) ? the property of being hit by Joe

This may have to do with a reading of the passive participle as an adjectival passive with the modifier being of the form *being*+adjective phrase (AP) as well.

The clausal modifier of *property* allows for certain stative verbs:

(26) a. the property of owning an apartment
     b. the property of owing someone money
     c. the property of resembling a film star
     d. the property of knowing a foreign language

These describe what Claudia Maienborn (2007) calls 'Kimean states' or why I prefer to call 'abstract states' (Moltmann 2013b), in contrast to 'Davidsonian states' (as Maienborn calls them) or 'concrete states', as I would call them. Concrete state verbs are generally verbs describing physical positions (*sit, stand, lie down, kneel*) and physical states (*sleep, wait, gleam*). They are generally excluded as predicates of clausal modifiers of *property*:

(27) a. ?? the property of sleeping / standing / sitting / kneeling
     b. ?? the property of standing in the corner
     c. ?? the property of sitting in the chair

Concrete state verbs and abstract state verbs are sharply distinguished semantic types. Concrete state verbs, in contrast to abstract state verbs, permit spatial modifiers, manner modifiers, and *with*-phrases, and they can act as naked infinitival complements of perception verbs:

(28) a. ?? Mary knows French in that room.
     b. Mary is sleeping in that room.

(29) a. ?? John owes Bill money in Germany.
    b. ? John knows French with effort.
(30) a. John was sitting with Mary.
    b. ?? John owes Bill money with Mary.
(31) a. John saw Mary sit on the chair.
    b. ?? John saw Mary resemble Sue.

What matters may not just be the type of verb, but also the relevant reading of the verb. In particular, verbs on a dispositional reading side with abstract state verbs:

(32) a. the property of speaking French
    b. ?? the property of speaking right now
(33) a. the property of eating meat
    b. ?? the property of eating that piece of meat

Similarly, *living* + location modifier, in the sense of 'residing' is to be distinguished from *living* as describing a concrete state:

(35) a. the property of living in Munich
    b. ?? the property of living

Exist also classifies as an abstract state verb, as opposed to the eventive existence verbs *occur*, *happen*, and *take place*:

(36) a. the property of existing
    b. ?? the property of occurring / happening / taking place

Full verbs thus need to meet particular semantic conditions in order for being acceptable in clausal modifiers of *property*: they need to describe abstract states.

Full verbs contrast in that respect not only with modifiers of the form *being*+AP (for AP an adjective phrase), but also modifiers of the form *being*+NP or *having*+NP. The copula verbs *be* and *have* followed by an NP are always acceptable in clausal modifiers of *property*:

(37) a. the property of being a father
    b. the property of having a father
(38) a. the property of being a player at the game
    b. the property of having wisdom
    c. the property of having siblings
    d. the property of having solved an important mathematical problem

Of particular interest is the fact that *being*+NP may describe, it seems, the very same situation as an eventive verb phrase, yet be acceptable as a clausal modifier of *property*. Here are some minimal pairs:

(39) a. the property of being the cause of a commotion
    b. ?? the property of causing a commotion

(40) a. the property of being the initiator of an investigation
     b. ?? the property of initiating an investigation
(41) a. the property of being an experience of pain
     b. ?? the property of experiencing pain
(42) a. the property of being the object of torture
     b. ? the property of being tortured

Eventive verbs contrast similarly with *being*+AP, even if the latter appears to describe the same situation. Minimal pairs in English are given in (43) and (44); (45) and (46) are cross-linguistic contrasting examples from French and English:

(43) a. the property of being asleep
     b. ?? the property of sleeping
(44) a. the property of being alive
     b. ?? the property of living
(45) a. la propriété d'être debout
     b. ?? the property of standing
(46) a. la propriété d'être assis
     b. ?? the property of sitting

It is not plausible that the difference with respect to eventive verbs is due to the content of the relevant adjectives and nouns. Rather, more plausibly, the reason is that the copula verbs *have* and *be* classify as abstract state verbs, as Maienborn (2019) in fact argued (for *be*), and thus that the clausal modifier of *property* generally needs to describe abstract states. Let us call the constraint on the clausal modifier of property-referring terms the Abstract-State Constraint:

(48) The Abstract-State Constraint: the clausal modifier of *property* must describe abstract states.

Adopting the Davidsonian view of verbs on which verbs have an additional argument for events, as in (49b), abstract states will be implicit arguments of stative verbs like *own* and *owe*, of verbs on a dispositional reading, and of the copula verbs *have* and *be*. Thus, *be* will denote a three place relation between abstract states, individuals and properties, as in (50b):

(49) a. John walked
     b. $\exists e(walk(e, John))$
(50) a. John is happy
     b. $\exists d(is(d, John, [happy]))$

Abstract states, like events, are particulars that depend ontologically on a particular agent. This means that they cannot themselves be properties, which are not dependent on particular individuals, but can be shared. Thus, gerundive and infinitival clauses themselves should stand for kinds of events or abstract states. This is independently plausible given the fact that gerundive and infinitival clauses as subjects accept typical kind predicates like *rare* and *widespread*:

(51) a. Winning the lottery is rare
     b. Getting a cold in winter is widespread

Thus, we can assume that gerundive and infinitival clauses are interpreted with the help of a kind-forming operator **k** and existential quantification with respect to the subject position, as below, where PRO occupies the empty subject position of the gerundive clause: [10]

(52) [PRO V-*ing*] = **k** e[∃x(V(e, x))]

The construction of explicit property-referring terms itself will involve reifying a kind of abstract state as a property, as below (for a verb V):

(53) [*the property of* PRO V-*ing*] = ιd[property(d) & d = reif([PRO V-ing])]

How should abstract states be conceived ontologically? If abstract states are Kimean states, this means that they are introduced by an implicit definition of the sort Jaegwon Kim (1976) had proposed for events:

(54) The Kimean notion of an event:
     For properties P and P_2, objects o and o_2, and times t and t_2
     a. The event s(P, o, t) = the event s(P_2, o_2, t_2) iff $P = P_2$, $o = o_2$, and t and t_2
     b. The event s(P, o, t) exists at a time t iff o has P at t.

Abstract states, unlike events, should not depend on a particular time (a state can obtain at different times, but an event cannot occur at different times). This means that a Kimean account of a state should look like this:

(55) The Kimean notion of a state:
     For properties P and P_2, and objects o and o_2:
     a. The state s(P, o) = the state s(P_2, o_2) iff $P = P_2$ and $o = o_2$.
     b. The state s(P, o) obtains at a time t iff P holds of d at t.

The Kimean notion of a state appears particularly plausible as an account of state arguments of *be*, which would be obtained from an individual and the bearerhood with respect to a property (and similarly for *have*). However, it hardly sheds any light on abstract states that are beliefs, dispositions, debts, beliefs, etc. Such abstract states are distinct from states obtained from properties, (55). For example, John's belief that he won the election can be true or firm, but not so John's believing that he won the election. What is more, the Kimean account presupposes a notion of a property that already excludes the sorts of properties denoted by eventive verbs like *walk* and concrete-state verbs like *stand*.

However, whether or not a unified definition of abstract states can be given, what is important is that abstract states share characteristic properties, such as lack of a spatial location and a specific manifestation, being the object of perception, etc. The fact that abstract states are distinguished from other categories in terms of their characteristic properties justifies the use of the notion of an abstract state in the formulation on the constraint of clausal modifier of explicit property-referring terms.

for these corrections (in (54) and (55) below), the proposed change is for a more noticeable apostrophe mark, e.g.,

33.7 Final Remarks: Explicit Property-Referring Terms, Learnability and the Core-Periphery Distinction in Natural Language Ontology

Given the Abstract-Object Hypothesis, complex property-referring terms, like all reifying terms should be part of the periphery of language, the place for reflective or non-ordinary uses of language. However, explicit property-referring terms are strictly subject to the Abstract-State Constraint, which cannot be overridden by non-ordinary use. No speaker, philosopher or non-philosopher, could use explicit property-referring terms having a notion of property in mind that violates the Abstract-State Constraint. The constraint, which pertains to the constructional meaning of a complex expression, would still need to be classified as part of the ontological core of natural language.

The Abstract-State Constraint obviously is not influenced by any philosophical views about properties a speaker may have been exposed to or have arrived at. Moreover, the constraint can hardly have been learned through experience: a child is unlikely to have ever been exposed to uses of explicit property-referring terms, let alone having been corrected in how to use them. What is remarkable is that even though exposure to such terms and their use is highly limited, we have robust intuitions about the ~~constraints~~ they are subject to. This constraint, which concerns an ontological category, thus appears to have the same status as universal grammar on the generative view and ~~should~~ best be considered part of it.

Notes

1 Descriptive metaphysics is not only a valuable pursuit of metaphysics in its focus on metaphysical intuitions. As Fine (2017) emphasizes, it is also presupposed by foundational metaphysics in that it means to clarify the notions presupposed by foundational metaphysics.

2 For an overview of natural language ontology with its core-periphery distinction, see Moltmann (2022).

3 For the distinction between modes and tropes, see Lowe (2005) and Hakkarainen and Keinänen (2023). Tropes are part of a reductive ontology on which individuals are construed as bundles of collocated tropes. Modes are manifestations of properties in individuals and as such are ontologically dependent on individuals.

4 '??' is meant to indicate semantic unacceptability (unacceptability on semantic grounds), as opposed to ungrammaticality (unacceptability on syntactic grounds), which is generally indicated '*' in linguistics. There are degrees of semantic acceptability, just as there are degrees of grammaticality. I will later use '?' to indicate a lesser degree of semantic acceptability than '??'. In fact, the distinction suggests that qualities are Aristotelian, immanent universals, whereas properties are conceived as platonic, transcendent universals (Moltmann 2004).

6 Alternatively, on a something-from-nothing transformation (Schiffer 1996), a pleonastic entity would be introduced whose nature is exhausted by pleonastic equivalences such as:

i. John has *the property of being happy* iff John is happy.

7 As part of the elaboration of the Abstract-Objects Hypothesis, in Moltmann (2013a) the various putative abstract terms in the core of language were reanalyzed either as expressions referring to particulars, as expressions referring to pluralities of (actual or possible) particulars, or as expressions that fail to have a referential function.

8 Quality terms, by contrast, may not be logically complex, as seen in the contrast below:
(i) a. Being heavy or red is a disjunctive property.
     b. ?? Heaviness or redness is a disjunctive quality.
(ii) a. Being round and square is a contradictory property.
     b. ?? Roundness and squareness is a contradictory quality.
     The reason is a morphological one, though one may argue that this is also part of the nature of qualities.

9 The relation could not be just identity, as this would lead to well-known paradoxes. See, for example, Chierchia and Turner (1988) for a different proposal.

10 The empty subject of gerundive and infinitival clauses might be taken to be what syntacticians call 'arbitrary PRO', standardly taken to be the subject of infinitival clauses or gerunds in generic sentences such as those below, where the empty subject co-varies with generic *one*:

(i) a. PRO to love one's parents is a good thing
   b. PRO$_b$ resembling one's parents is normal

(ii) a. the property of PRO$_{arb}$ loving one's parents
    b. the property of PRO$_{arb}$ resembling one's parents

Arbitrary PRO, however, is generally restricted to human beings, or more appropriately, conscious beings (Moltmann 2006). Therefore it cannot generally be present in complex property-referring terms, which are unproblematic when applied to inanimates (*the table has the property of breaking under a weight more than a kilo*). In fact, an empty subject of clausal modifiers of *property* co-varying with *one(self)* is rather bad when applied to inanimate objects, as the contrast below makes clear:

(iii) a. ?? the property of being identical with oneself / itself
     b. the property of being self-identical

References

Armstrong, D.M. (1978) *Universals and Scientific Realism II: A Theory of Universals*. Cambridge: Cambridge University Press.

Bealer, G. (1982) *Quality and Concept*. Oxford: Clarendon Press.

Carlson, G.N. (1980) *Reference to Kinds in English*. New York: Garland.

Chierchia, G. (1988) *Topics in the Syntax and Semantics of Infinitives and Gerunds*. New York: Routledge.

Chierchia, G. and Turner, R. (1988) Semantics and Property Theory. *Linguistics and Philosophy* 11(3): 261–302.

Davidson, D. (1967) The Logical Form of Action Sentences. In Rescher, N. (ed.) *The Logic of Decision and Action*. Pittsburgh: Pittsburgh University Press: 81–95.

Dummett, M. (1973) *Frege: Philosophy of Language*. Vol. 1. London: Duckworth.

Fine, K. (2017) Naïve Metaphysics. *Philosophical Issues* 27(1): 98–113.

Hakkarainen, J. and Keinänen, M. (2023) Bradley's Relation Regress and the Inadequacy of the Relata-Specific Answer. *Acta Analytica* 38(2): 229–243.

Hale, B. (1987) *Abstract Objects*. New York: Blackwell.

Jones, N. (2016) A Higher-order Solution to the Problem of the Concept Horse. *Ergo: An Open Access Journal of Philosophy* 3(6): 132–166.

Kim, J. (1976) Events as Property Exemplifications. In Brand, M. and Walton, D. (eds.) *Action Theory*. Dordrecht: Reidel: 310–326.

Lewis, D. (1979) Attitudes *De dicto* and *De se*. *Philosophical Review* 88(4): 513–543.

Lewis, D. (1986) *On the Plurality of Worlds*. New York: Blackwell.

Lowe, E.J. (2005) *Four-Category Ontology*. Oxford: Oxford University Press.

Maienborn, C. (2007) On Davidsonian and Kimian States. In Comorovski, I. and von Heusinger, K. (eds.) *Existence: Semantics and Syntax*. Dordrecht: Springer: 107–130.

Maienborn, C. (2019) Events and States. In Truswell, R. (ed.) *Oxford Handbook of Event Structure*. Oxford: Oxford University Press: 50–89.

Moltmann, F. (2004) Properties and Kinds of Tropes: New Linguistic Facts and Old Philosophical Insights. *Mind* 113(449): 1–43.

Moltmann, F. (2006) Generic One, Arbitrary PRO, and the First Person. *Natural Language Semantics* 14(3): 257–281.

Moltmann, F. (2013a) *Abstract Objects and the Semantics of Natural Language*. Oxford: Oxford University Press.

Moltmann, F. (2013b) On the Distinction between Abstract States, Concrete States, and Tropes. In Mari, A., Beyssade, C. and Del Prete, F. (eds.) *Genericity*. Oxford: Oxford University Press: 292–311.

Moltmann, F. (2020) Abstract Objects and the Core-Periphery Distinction in the Ontological and Conceptual Domain of Natural Language. In Falguera, J.L. and Martínez, C. (eds.) *Abstract Objects: For and Against*. Dordrecht: Springer: 255–276.

Moltmann, F. (2022) Natural Language Ontology. In Zalta, E.N. (ed.) *Stanford Encyclopedia of Philosophy*. URL = <https://plato.stanford.edu/entries/natural-language-ontology/>.

~~Moltmann, F. (ms) Modes, Disturbances, and Spatio-Temporal Location.~~

Rayo, A. and Yablo, S. (2001) Nominalism through Denominalization. *Noûs* 35(1): 74–92.

Schiffer, S. (1996) Language-Created, Language-Independent Entities. *Philosophical Topics* 24(1): 149–167.

Strawson, P. F. (1959) *Individuals: An Essay in Descriptive Metaphysics*. London: Methuen.

Skiba, L. (2021) Higher-Order Metaphysics. *Philosophy Compass* 16(10): 1–11.

Wright, C. (2007) On Quantifying into Predicate Position. In Potter, M. (ed.) *Mathematical Knowledge*. Oxford: Oxford University Press: 150–174.