

# Динамический характер значения прилагательных

## The dynamics of adjective meaning<sup>1</sup>

Partee Barbara H. (partee@linguist.umass.edu)

University of Massachusetts, Amherst, MA, USA; Moscow State University

Значение находится в динамическом взаимодействии с контекстом. Наша задача — описать зависимость значения от контекста, не отказываясь от принципа композициональности. Мы проиллюстрируем эту проблему на примере семантики некоторых сортов прилагательных. Будет показано, как взаимодействуют друг с другом композициональная семантика, лексическая семантика и контекст.

### Introduction

A central concern for the study of meaning is how the meanings of expressions are composed from the meanings of their constituent parts. What are “parts”? The Principle of Compositionality requires a notion of part-whole structure that is based on syntactic structure.

**Principle of Compositionality:** The meaning of a whole is a function of the meanings of the parts and of the way they are syntactically combined.

This is a good if informal statement of the basic principle. There have been many challenges to it of different sorts, but it makes a good working principle: apparent counterexamples are invitations to work hard to uncover new descriptive accounts or to make revisions somewhere in the theoretical framework.

The focus of the paper will be some aspects of the dynamic interaction of meaning and context. One important challenge faced by compositional approaches is how to account for context-dependent meaning shifts without abandoning compositionality. The semantics of different kinds of adjectives presents challenges of this sort. The interplay of context-dependence and intensionality is crucial for showing why *skillful* is intensional but *large* is not, even though we may consider a large house not to be a large building. I will also take up the puzzles of “privative” adjectives like *fake* and *counterfeit* and “redundant” adjectives like *real*. I will try to show how attention to the semantics of syntactic

structure (compositional semantics) sheds light on word meaning, and how compositional semantics, lexical semantics, and the context of the utterance all interact.

### 1. Introduction to adjective semantics

Montague [3] presented a semantic treatment of adjectives which he credited to unpublished work by Hans Kamp and by Terence Parsons; that work, and similar work of Romaine Clark, was subsequently published [4–6]. The central claim in that work was that adjective meanings should be analyzed as functions from properties to properties. Among adjective meanings, some might satisfy further constraints such as intersectivity or subsectivity, but no such constraint can be imposed on the class as a whole, the argument goes, because of the existence of adjectives like *false*, *ostensible*, *alleged*.

Since Montague insisted on having a uniform semantic type for each syntactic category, he gave all adjectives the type of functions from properties to properties. More restricted subclasses of adjectives, such as the subsective (*skillful*, *good*) and intersective (*purple*, *carnivorous*) adjectives, could then be indicated by the use of meaning postulates. Most current theories allow type multiplicity and type-shifting, and assign to the intersective adjectives the simpler type of one-place predicates.

Kamp and Partee [7] review the standard “hierarchy” of classes of adjectives as a preliminary to a discussion of the possible appropriateness of prototype theory for

<sup>1</sup> I am grateful to Anita Nowak for showing me the Polish Split-NP facts, and to Meredith Landman for initial discussion. For valuable comments I thank Lisa Matthewson and her UMass Fall 2000 Pro-Seminar, several classes of students at RGGU and MGU in Moscow, participants of a colloquium in honor of Terry Parsons at Notre Dame in 2003, and audiences in Leipzig, Copenhagen, Amsterdam, Arizona, Prague, and Göteborg. I thank Maria Gouskova, Bozena Cetnarowska, and Bozena Rozwadowska for helpful discussions of the Polish data, and an anonymous reviewer for suggestions for improvement. This talk is based on [1] and [2]. This work was supported in part by NSF Grants BCS-9905748 and BCS-0418311 to Partee and Vladimir Borshev.

some adjective-noun combinations. The hierarchy ranges from intersective adjectives like *carnivorous* to privative adjectives like *counterfeit*, *fake*, and *fictitious*. The same article makes proposals for coercion of adjective meanings in context, driven by certain general constraints, which help to explain a number of kinds of meaning shifts. Some problem cases remained, especially the case of *stone lion*, where it seems that the noun rather than the adjective shifts its meaning, contrary to our predictions.

But now I want to argue that in fact adjective meanings are more constrained than was appreciated in the work of Montague, Kamp, Parsons and Clark or in the work of Kamp and Partee. I will argue that some facts about the possibility of “NP-splitting” in Polish and Russian cast serious doubt on the standard hierarchy, and that the data become much more orderly if privative adjectives like *counterfeit*, *fake*, and *fictitious* are reanalyzed as subsective adjectives. Further evidence for that move comes from long-standing puzzles about what to say about sentences like *Is that gun real or fake?* The revised account requires the possibility of coerced expansion of the denotation of the noun to which such an adjective (as well as adjectives like *real*) is applied. Such coercion can be motivated by treating the constraints on possible adjective meanings as presuppositions that must be satisfied by any use of an adjective; the corresponding coercion is then a form of presupposition accommodation.

The rest of the paper is structured as follows. Section 2 briefly reviews the adjective classification familiar since the work of the 1970’s as summarized in [7] and [8]. The Polish NP-splitting data [9] and the problem they pose for the familiar hierarchy are presented in Section 3. In Section 4 I review some of the constraints on possible adjective meanings proposed in [7] and propose further constraints that exclude privative adjectives and account for the coercion of the noun meaning in cases that would otherwise come out as privative.

A qualification must be made at the beginning. There are many Adj-Noun combinations that are idioms, compounds, or otherwise lexicalized, non-compositional units: they must be learned as wholes, although their parts may give a clue to their meaning. No proposals in this paper are claimed to apply to phrases like “black-bird”, “black death” (= the plague), etc.

## 2. Adjective classification

### 2.1. Meaning postulates for classes of adjectives

An adjective like *carnivorous* is **intersective**, in that the informally stated meaning postulate (1) holds for any N.

$$(1) \quad ||\textit{carnivorous N}|| = ||\textit{carnivorous}|| \cap ||N||$$

But *skillful* is not, as shown by the invalid inference pattern in (2), familiar from the work of Kamp, Parsons, Clark, and Montague.

- (2) *Premise: Francis is a skillful surgeon.*  
*Premise: Francis is a violinist.*

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*Conclusion: Francis is a skillful violinist. INVALID*

*Skillful* is not intersective, but it is **subjective**: meaning postulate (3) holds for any N.

$$(3) \quad \textit{Subsectivity: } ||\textit{skillful N}|| \subseteq ||N||$$

The adjectives *former*, *alleged*, *counterfeit* are neither intersective nor subjective.

- (4) (a)  $||\textit{former senator}|| \neq ||\textit{former}|| \cap ||\textit{senator}||$   
 (b)  $||\textit{former senator}|| \not\subseteq ||\textit{senator}||$

**Nonsubjective** adjectives may either be “plain” nonsubjective (no entailments at all, no meaning postulate needed), or **privative**, entailing the negation of the noun property. The meaning postulate for privative adjectives is stated informally in (5).

$$(5) \quad ||\textit{counterfeit N}|| \cap ||N|| = \emptyset$$

Additional examples of each type are given below.

- (6) (i) intersective: *sick, carnivorous, blond, rectangular, French.*  
 (ii) non-intersective but subjective: *typical, recent, good, perfect, legendary.*  
 (iiia) non-subsective and privative: *would-be, past, spurious, imaginary, fictitious, fabricated* (in one sense), *mythical* (maybe debatable); there are prefixes with this property too, like *ex-*, *pseudo-*, *non-*.  
 (iiib) plain non-subjective: *potential, alleged, arguable, likely, predicted, putative, questionable, disputed.*

The conclusion drawn by Parsons, Kamp, Clark and Montague was that the simplest general rule for interpretation of the combination of an adjective with a noun (or common noun phrase: CNP) is the following: Adjectives are functions that map the (intensional) semantic value of the CNP they combine with onto the semantic value of the ADJ + CNP combination. That is, “The denotation of an adjective phrase is always a function from properties to properties. (This was one of the proposals advanced by Kamp and Parsons.)” [3, p.211 in Montague 1974]

Meaning postulates specify various restrictions on these functions, characterizing various subclasses of adjectives. “Semantic features” may be seen as labels for meaning postulates which give them determinate content. Thus a lexical entry for an intersective adjective like *green* might contain the “feature” +INTERSEC-

TIVE, which can be taken as labelling a semantic property of the adjective, spelled out by a meaning postulate.

Alternatively, and more commonly, intersective adjectives (and only those) can be interpreted in type  $\langle e,t \rangle$ . This alternative treatment automatically guarantees their intersectivity and eliminates the need for a meaning postulate. Type-shifting rules of the sort described in Partee (1995) will give them homonyms of a functional type when needed.

The “plain” nonsubsective adjectives (*alleged, possible*) have no meaning postulate; this class is “noncommittal”: an *alleged murderer* may or may not be a *murderer*.

The **subsective** adjectives (*skillful, good*) have a meaning postulate specifying that the ADJ + CNP combination denotes a subset of the CNP denotation: a *skillful surgeon* is a *surgeon*. The **privative** adjectives (*fake, counterfeit*) have a “negative” meaning postulate; a *fake gun* is not a *gun*.

On this familiar classification, adjectives are seen as forming a hierarchy from intersective to subsective to nonsubsective, with the privative adjectives an extreme case of the nonsubsective adjectives.

Among many other debated points, one which has always been troubling, and to which we will return in Section 4, is the question of whether an adjective or adjectivally used noun like *fake* or *toy* is really privative. One problem is the tension between the possible truth of (7a) and the undeniable well-formedness and interpretability of (7b).

- (7) (a) *A fake gun is not a gun.*  
 (b) *Is that gun real or fake?*

## 2.2. Is tall intersective or subsective?

There are many questions and disputes when it comes to assigning particular adjectives to particular classes. Kamp [5] added an important insight in arguing that adjectives like *tall*, which seem to be non-intersective, are actually intersective but context-dependent. Kamp’s analysis found linguistic support in Siegel’s analysis of long-form and short-form adjectives in Russian [10, 11].

In Section 2.1 we said that the inference pattern (2) was a test of whether an adjective was intersective. By this test, vague adjectives like *tall* would appear to be non-intersective:

- (2') *Premise: Tom is a tall 14-year-old.*  
*Premise: Tom is a basketball player.*

*Conclusion: Tom is a tall basketball player. INVALID??*

Does this mean that *tall* is not intersective? No; perhaps it is intersective but vague and context-dependent. How can we tell the difference?

First argument. Keep the ADJ-N sequence constant but change other aspects of the context. That can help to show whether it is the intension of the noun that is crucial.

- (2'') (a) *My two-year-old son built a really tall snowman yesterday.*  
 (b) *The linguistics students built a really tall snowman last weekend.*

Further evidence that there is a difference between truly nonintersective subsective adjectives like *skillful* and intersective but vague and context-dependent adjectives like *tall* was noted by Siegel (1976b): the former occur with *as*-phrases, as in *skillful as a surgeon*, whereas the latter take *for*-phrases to indicate comparison class: *tall for an East coast mountain*. (An adjective can be nonintersective and **also** vague, and then one can use both an *as*-phrase and a *for*-phrase: *very good as a diagnostician for someone with so little experience*.)

There has been much further work on the semantics of adjectives in the intervening years, and the context-dependence of interpretation of adjectives is central in the work of Klein [12] and more recently of Kennedy [13].

## 3. Privative adjectives and Polish NP-split phenomena

Nowak [9] studied the phenomenon of “split PPs” and “split NPs” in Polish, a construction that is conditioned primarily by topic-focus articulation [14, 15]. An NP consisting of Adj and N in Polish may be “split”, with either Adj or N sentence-initial and the other sentence-final. Sequences of Adj’s can be sentence-initial; only a single element can be sentence-final. Examples of NP-splits are given in (8 — 9) below, with the relevant constituents underlined.

Sentences (8b) and (9b) are ‘split’ versions of sentences (8a) and (9a), which represent the unmarked word order. All examples are from Nowak [9]<sup>2</sup>.

- (8) (a) *Kelnerki rozmawiały o przystojnym chłopcu.*  
 Waitresses talked about handsome-LOC boy-LOC  
 ‘The waitresses talked about a handsome boy.’  
 (b) *O przystojnym kelnerki rozmawiały chłopcu.*  
 about handsome-LOC waitresses talked boy-LOC  
 ‘The waitresses talked about a handsome BOY’
- (9) (a) *Włamano się do nowego sklepu.*  
 broke-in (one) reflex. to new-GEN store-GEN  
 ‘Someone broke into the new store.’  
 (b) *Do sklepu włamano się nowego.*  
 to store-GEN broke-in (one) reflex. new-GEN  
 ‘Someone broke into the NEW store.’

What is of particular relevance for this paper is that some adjectives can participate in the splitting construction and some cannot.

<sup>2</sup> Bożena Cetnarowska (p.c.) has informed me that the data are less black-and-white than they appear here; I will not discuss the complexities here, but only note that the generalizations made in the text still seem to hold.

- (10) *Do rozległej weszliśmy doliny.*  
to large-GEN (we)entered valley-GEN  
'We entered a large VALLEY.'

- (11) \**Z potencjalnym widzieli się kandydatem.*  
with potential-INSTR (they)saw reflex. candidate-INSTR  
'They met with a potential CANDIDATE'

Those that CAN split include:

- (12) (a) *rozległy* 'large, vast'  
(b) *biedny* 'poor' in the sense of 'not rich',  
not in the sense of 'pitiful'  
(c) *zdrowy* 'healthy', *amerykański* 'American', *gadatliwy* 'talkative' (intersective)  
(d) *dobry* 'good', *sławny* 'famous', *wprawny* 'skillful' (subsective)  
(e) *fikcyjny* 'fictitious', *wymyślony* 'imaginary',  
*falszywy* 'fraudulent' (privative [!])

Those that CANNOT split include:

- (13) (a) *biedny* 'poor' in the sense of 'pitiful'  
(b) *potencjalny* 'potential', *rzekomy* 'alleged',  
*sporny* 'disputed', *oczekiwany* 'expected, due, anticipated' (non-subsective, non-privative ('modal'))

Another important fact is that the ones that cannot split also cannot occur predicatively.

On the traditional classification outlined in Section 2, the adjectives which can participate in the NP-split phenomenon are not a "natural class". It is unexpected for the intersective, subsective, and privative adjectives to pattern together, while the non-subsective adjectives that are "noncommittal" (and generally "modal"), cannot participate in the NP-split.

#### 4. Principles of interpretation and the "no privative adjectives" hypothesis

The hypothesis I propose is that Nowak's data provide a clue that the adjectives *fake* and *imaginary* aren't actually privative, but subsective, and that no adjectives are actually privative. In interpreting a question like (7b) above or sentences like (14a) and (14b) below, I propose that we *expand* the denotation of *fur* to include both *fake* and *real fur*.

- (14) (a) *I don't care whether that fur is fake fur or real fur.*  
(b) *I don't care whether that fur is fake or real.*

In fact, even in (7a), it is reasonable to suppose that the first occurrence of *gun*, modified by *fake*, is similarly coerced, whereas the second, unmodified, occurrence is not. Normally, in the absence of a modifier like *fake* or *real*, all guns are understood to be real guns, as is evident when

one asks how many guns the law permits each person to own, for instance. Without the coerced expansion of the denotation of the noun, not only would *fake* be privative, but the adjective *real* would always be redundant<sup>3</sup>.

Kamp and Partee [7], in discussing the "recalibration" of adjective interpretations in context, introduced a number of principles, including the following "Non-Vacuity Principle".

#### (15) Non-vacuity principle (NVP):

In any given context, try to interpret any predicate so that both its positive and negative extension are non-empty. [7, p.161]

The Non-Vacuity Principle applies not only to simple predicates but to predicates formed, for instance, by combination of an adjective and a noun: these should be interpreted in such a way that the ADJ + N combination is a non-vacuous predicate.

Kamp and Partee [7] also argued, using example (16), that in ADJ + N constructions, one first interprets the noun in the larger context (ignoring the adjective), and then "recalibrates" the adjective as necessary. This is expressed as the "Head Primacy Principle" in (17).

- (16) (a) *giant midget*  
(a *midget*, but an *exceptionally large one*)  
(b) *midget giant*  
(a *giant*, but an *exceptionally small one*)

(17) **The Head primacy principle (HPP):** In a modifier-head structure, the head is interpreted relative to the context of the whole constituent, and the modifier is interpreted relative to the local context created from the former context by the interpretation of the head.<sup>4</sup> [7, p.161]

In many cases, the Non-Vacuity Principle and the Head Primacy Principle cooperate to account for the observed results, including not only the examples in (16), but also the fact that the truth of (18b) below is compatible with a non-redundant use of the modifier in (18a).

- (18) (a) *This is a sharp knife.*  
(b) *Knives are sharp.* [7, p.162]

If the Head Primacy Principle is absolute, the proposed shift in the interpretation of the head noun under coercion by a privative adjective like *fake* or a "tautologous" adjective like *real* would be impossible. But there are other examples that suggest that the Head Primacy Principle is non-absolute. In particular, there is a large

<sup>3</sup> This property of *real* is noticed in passing by Lakoff in [16].

<sup>4</sup> "In the simplest cases, the effect of the interpretation of a head noun on a given context will be to restrict the local domain to the positive extension of the head in the given context." [7].

and productive class of “constitutive material” modifiers that occur in examples like *stone lion*, *wooden horse*, *velveteen rabbit*, *rubber duck*. It is evidently so easy to shift nouns from their literal meaning to a meaning “representation/model of ...” that we hardly notice the shift.

The perspective of Optimality Theory suggests that we can account for this situation by saying that the Non-Vacuity Principle outranks the Head Primacy Principle. We normally try to obey both. But if there is no reasonable way to obey the Non-Vacuity Principle without shifting the noun outside its normal bounds (as in the case of *fake* and *real*), then it may be shifted in such a way as to make the compound predicate obey the Non-Vacuity Principle.

So I suggest that **no adjectives are privative** [2]. “Normal” adjectives are always subsective, and there should be some ways to identify “modal” adjectives as a special subclass, such that only they are not necessarily subsective.

If the “no privatives” hypothesis can be maintained, then the classification of adjectives is much more neatly constrained. Adjectives are still functions from properties to properties in the general case, but in harmony with the traditional notion of *modifiers*, they are normally constrained to be subsective. We still need to allow for the ‘modal’ adjectives, which are not so constrained; the Polish data provide fuel for a proposal to consider them syntactically as well as semantically distinct. Of course

more work also needs to be done on the detailed lexical semantics of each of the putatively privative adjectives, since they are far from identical; but that is beyond the scope of this paper.

## 5. Conclusions

The adjective puzzles that I have been discussing were designed to illustrate several issues. One is the need to study lexical semantics and principles of semantic composition together; decisions about either may have major repercussions for the other. More importantly for this context, I have tried to show that while contextually influenced meaning shifts pose challenges for compositionality, we can see that compositionality plays an essential role in constraining the kinds of meaning shifts that take place. We hold the principle of compositionality constant in working out (unconsciously) what shifts our interlocutors may be signaling. In the extreme case we (like children) depend on compositionality to figure out the meanings of novel words: if we can use contextual clues to guess what a whole sentence or phrase means, we can then “solve” for the meaning of the unknown word. Compositionality thus appears to be one of the most cognitively basic principles in the realm of semantics.

## References

1. Partee B. H. Compositionality and coercion in semantics: The dynamics of adjective meaning // *Cognitive Foundations of Interpretation*. Amsterdam: Royal Netherlands Academy of Arts and Sciences, 2007. P. 145–161.
2. Partee B. H. Privative adjectives: subsective plus coercion // *Presuppositions and Discourse*. Amsterdam: Elsevier, In press.
3. Montague R. English as a formal language // *Linguaggi nella Società e nella Tecnica*. Milan: Edizioni di Comunità, 1970. P. 189–224.
4. Clark R. L. Concerning the logic of predicate modifiers // *Noûs*, 1970. 4. P. 311–335.
5. Kamp H. Two theories about adjectives // *Formal Semantics of Natural Language*. Cambridge: Cambridge University Press, 1975. P. 123–155.
6. Parsons T. *Some problems concerning the logic of grammatical modifiers* // *Synthese*, 1970. 21. P. 320–340.
7. Kamp H., Partee B. Prototype theory and compositionality // *Cognition*, 1995. 57. P. 129–191.
8. Partee B. Lexical semantics and compositionality // *An Invitation to Cognitive Science* (Second Edition). Vol. 1: Language. Cambridge: MIT Press, 1995. P. 311–360.
9. Nowak A. On split PPs in Polish // Amherst: unpublished manuscript, 2000.
10. Siegel M. *Capturing the Russian adjective* // *Montague Grammar*. New York: Academic Press, 1976. P. 293–309.
11. Siegel M. E. A. *Capturing the Adjective*. Amherst: University of Massachusetts, 1976.
12. Klein E. A semantics for positive and comparative adjectives // *Linguistics and Philosophy*, 1980. 4. P. 1–45.
13. Kennedy C. *Projecting the Adjective*. // Santa Cruz: University of California Santa Cruz, 1997.
14. Melhorn G. Information structure of discontinuous constituents in Russian // *Current Issues in Formal Slavic Linguistics (FDSL-3)*. Frankfurt/Main: Lang, 2001. P. 344–352.
15. Siewierska A. Phrasal discontinuity in Polish // *Australian Journal of Linguistics*, 1984. 4. P. 57–71.
16. Lakoff G. *Women, Fire, and Dangerous Things* // Chicago and London: The University of Chicago Press, 1987.