Are There Privative Adjectives?[1]

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0. Introduction

Montague (1970a) presented a semantic treatment of adjectives which he credited to unpublished work done independently by Hans Kamp and Terence Parsons; that work, and similar independent work of Romaine Clark, was subsequently published (Clark 1970, Kamp 1975, Parsons 1970). 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.*

The strategy of "generalizing to the worst case", followed by Montague in order to have a uniform assignment of semantic types to syntactic categories, called for giving 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, might be indicated by the use of meaning postulates. In theories which allow type multiplicity and type-shifting, the intersective adjectives might indeed be assigned the simpler type of one-place predicates; this is now widely assumed.

Kamp and Partee (1995) review the more or less standard "hierarchy" of classes of adjectives as a preliminary to arguing that arguments concerning the appropriateness of prototype theory as a part of the account of the semantics of adjective-noun combinations should be restricted to intersective adjectives. The hierarchy ranges from intersective adjectives like *carnivorous* to privative adjectives like *counterfeit, fake,* and *fictitious.* The same article makes some proposals for coercion of adjective meanings in context, driven by certain general constraints, which help to explain a number of kinds of shifts and adjustments that take place when adjective-noun combinations are interpreted in various kinds of contexts. Some problem cases remained, especially the case of *stone lion*, where it seems that the noun rather than the adjective shifts its meaning when faced with incompatibility of the primary senses of each word.

The aim of the present note is to argue that in fact adjective meanings are more constrained than was appreciated either at the time of the work of Montague, Kamp, Parsons and Clark or at the time of the work of Kamp and Partee. In particular, I will argue that some facts about the possibility of "NP-splitting" in Polish 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, genuine*, which were not examined in the earlier-cited literature) 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 may then be seen as a form of presupposition accommodation.

The present note is structured as follows. Section 1 briefly reviews the adjective classification familiar since the work of the 1970's as summarized in Kamp and Partee (1995) and in (Partee 1995). The Polish NP-splitting data (Nowak 2000) and the problem they pose for the familiar hierarchy are presented in Section 2. Section 3 reviews some of the constraints on possible adjective meanings proposed in Kamp and Partee (1995) and proposes further constraints that exclude privative adjectives and account for the coercion of the noun meaning in cases that would otherwise come out as privative.

1. Adjective classification

An adjective like *carnivorous* is **intersective** (Parsons: **predicative**), in that (1) holds for any N.

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

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

(2)   Francis is a skillful surgeon.
         Francis is a violinist.
         Therefore Francis is a skillful violinist.   [Not valid]

Skillful is not intersective, but it is **subsective** (Parsons: **standard**): (3) holds for any N.

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

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

 (4)   (a) $\|former \text{ } senator\| \neq \|former\| \cap \|senator\|$

          (b) $\|former \text{ } senator\| \not\subseteq \|senator\|$

Nonsubsective adjectives may either be "plain" nonsubsective (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) $\|counterfeit \text{ N}\| \cap \|\text{N}\| = \varnothing$

Additional examples of each type are given below.

(6)   (i) intersective: *sick, carnivorous, blond, rectangular, French*.
        (ii) non-intersective but subsective: *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-subsective: *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.)" (Montague 1970a, p.211 in Montague 1974)

In terms of the type theory of Montague's Intensional Logic (Montague 1970b, Montague 1973), where common noun phrases are of type $<<s,e>,t>$, this meant that the most general type for adjectives was taken to be $< <s,<<s,e>,t>>, <<s,e>,t>>$. On the variant of Bennett (1974), followed in most subsequent work in the Montague grammar tradition, the CNP is of type $<e,t>$, and adjectives are then of type $<<s,<e,t>>, <e,t>>$.

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" INTERSECTIVE, or +INTERSECTIVE, which can be taken as labelling a semantic property of the adjective, spelled out by a meaning postulate.

Meaning postulates for the subtypes listed above are spelled out in somewhat more formal terms below. The meaning postulates are written with the assumption that the basic type for all adjectives is $<<s,<e,t>>, <e,t>>$.

(7)   **Intersective** adjectives: For each intersective adjective meaning ADJ',
        $\exists P_{<e,t>}\Box\forall Q_{<s,<e,t>>}\forall x_e[ADJ'(Q)(x) \leftrightarrow P(x) \,\&\, {}^\lor Q(x)]$

(Alternatively, intersective adjectives (and only those) can be interpreted in type $<e,t>$. This 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 type $<<e,t>,<e,t>>$ when needed.)

(8)   **Subsective** adjectives: For each subsective adjective meaning ADJ',
        $\Box\forall Q_{<s,<e,t>>}\forall x_e[ADJ'(Q)(x) \rightarrow {}^\lor Q(x)]$

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

(9)   **Privative** adjectives: For each privative adjective meaning ADJ',
       $\Box\forall Q_{<s,<e,t>>}\forall x_e[ADJ'(Q)(x) \rightarrow \neg[{}^{\lor}Q(x)]]$

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

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[2].

There are of course many questions and disputes when it comes to assigning particular adjectives to particular classes. Kamp (1975) added an important dimension to the discussion in arguing that adjectives like *tall*, which at first sight 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 (Siegel 1976a, 1976b). 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 (1980) and most recently of Kennedy (1997).

Among many other debated points, one which has always been troubling, and to which we will return, is the question of whether an adjective or adjectivally used noun like *fake* or *toy* is really privative. One nagging problem is the evident tension between the apparent truth of (10a) and the undeniable well-formedness and interpretability of (10b).

(10)   a. A fake gun is not a gun.
        b. Is that gun real or fake?

2. Privative adjectives and Polish NP-split phenomena

Nowak (2000) studied the phenomenon of "split PPs" and "split NPs" in Polish. (See also (Gouskova 2000) for related work on Russian, as well as (Junghanns 2000, Mehlhorn 2000).) Ignoring PPs for simplicity, and ignoring the topic-focus structure that motivates the splitting, the facts are that an NP consisting of Adj and N in Polish may be "split", with either the Adj sentence-initial and the N sentence-final, or the N sentence-initial and the Adj sentence-final. Sequences of Adj's can be sentence-initial; only a single element can be sentence-final. Examples of NP-splits (these are all actually PP-splits, which combine properties of NP-splits with constraints on where the preposition can end up) are given in below.

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[2] Although I believe it has been customary to treat these four classes as forming a kind of a scale, with the intersective adjectives at one end and the privative adjectives at the other, the meaning postulates do not actually conform to such a linear scale. With respect to the meaning postulates, one can make a three-class scale, from intersective (the most restricted) to subsective to unrestricted (not-necessarily-subsective). The intersective adjectives are a subset of the subsective adjectives, which are in turn a subset of the unrestricted set, i.e. of the set of all adjectives. The privative adjectives are also a subset of the unrestricted set, but one which is disjoint from the set of subsective adjectives.

Sentences (11b) and (12b) are 'split' versions of sentences (11a) and (12a), which represent the unmarked word order. In (11b) the preposition and adjective in sentence-initial position and the bare noun is sentence-final, while in (12b) the preposition and noun are sentence-initial and the adjective is sentence-final. All examples are from Nowak (2000)[3].

(11)(a) Kelnerki   rozmawiały <u>o   przystojnym   chłopcu</u>.
    *waitresses talked   about handsome*LOC. *boy* LOC.
    'The waitresses talked about a handsome boy.'

  (b) <u>O   przystojnym</u> kelnerki   rozmawiały <u>chłopcu</u>.
    *about handsome*LOC. *waitresses talked   boy*LOC.
    'The waitresses talked about a handsome BOY'

(12)(a) Włamano   się   <u>do nowego sklepu</u>.
    *broke-in (one) reflex. to new*GEN. *store*GEN.
    'Someone broke into the new store.'

  (b) <u>Do sklepu</u>   włamano   się   <u>nowego</u>.
    *to store*GEN. *broke-in (one) reflex. new*GEN.
    'Someone broke into the NEW store.'

What is of particular interest here is that some adjectives can particpate in the splitting construction and some cannot.

(13) a. <u>Do rozległej</u> weszliśmy <u>doliny</u>.   (b) Do doliny   weszliśmy   rozległej
    *to large-*GEN*(we)entered valley-*GEN   *to valley-*GEN *(we)entered   large-*GEN
    'We entered a large VALLEY.'   'We entered a LARGE valley.'

(14) a.*<u>Z byłym</u>   rozmawiała <u>prezydentem</u>.   b. *<u>Z prezydentem</u>   rozmawiała <u>byłym</u>.
  *with former-*INSTR *(she)talked president-*INSTR   *with president-*INSTR *(she)talked former*
  'She talked with the former PRESIDENT'   'She talked with the FORMER president'

Those that CAN split include:

(15)   a. *rozlegley* 'large'
      b. *biedny* 'poor' in the sense of 'not rich', not in the sense of 'pitiful'
      Polish translations of
generous, pretty, healthy, Chinese, talkative (intersective)
skillful, recent, good, typical (subsective)
      e. *counterfeit, past (?!), spurious, imaginary, fictitious* (privative [!])

Those that CANNOT split include:

(16)   a. *biedny* 'poor' in the sense of 'pitiful'

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[3] 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.

Polish translations of *alleged, potential, predicted, disputed* (non-subsective, non-privative ('modal')

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

What is peculiar about this data in the light of the traditional classification outlined in Section 1 is that the NP-split phenomenon does not apply to 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 which can reasonably be characterized as "modal"), cannot participate in the NP-split.

3.   Principles of interpretation

The hypothesis I propose is that Nowak's data tells us that adjectives *fake* and *imaginary* aren't actually privative, but subsective, and that no adjectives are actually privative. In interpreting a question like (10b) above or a sentence like (17) below, I hypothesize that we actually expand the denotation of 'fur' to include both fake and real fur.

(17)   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 (10a), 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 is 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[4].

Kamp and Partee (1995), in discussing the "recalibration" of adjective interpretations in context, introduced a number of principles, including the following "Non-Vacuity Principle".

(18)   **Non-vacuity principle (NVP):**
       In any given context, try to interpret any predicate so that both its positive and
       negative extension are non-empty. (Kamp and Partee 1995, 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.

However, Kamp and Partee (1995) also argued, in part on the basis of clear examples like (19), that in ADJ + N constructions, one first interprets the noun in the given context

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[4] This property of *real* is noticed in passing by Lakoff (1987, p.75).

(ignoring the adjective), and then "recalibrates" the adjective as necessary. This principle is expressed as the "Head Primacy Principle" in (20).

(19) a. giant midget   (a midget, but an exceptionally large one)
      b. midget giant   (a giant, but an exceptionally small one)

(20) **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.[5] (Kamp and Partee 1995, 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 (19), but also the fact that the truth of (21b) below is compatible with a non-redundant use of the modifier in (21a).

(21) a. This is a sharp knife.
      b. Knives are sharp. (Kamp and Partee 1995, 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 as well that suggest that the Head Primacy Principle probably has to be seen as non-absolute. In particular, there is a large 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.[6]

Without trying to formalize this idea (which might have a natural expression within Optimality Theory), I would suggest the following. We normally try to obey both the Head Primacy Principle and the Non-Vacuity Principle. 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. (Since this is *always* necessary with privative and "tautologous" modifiers, there might even be something in their lexical semantics that particularly indicates the need to shift the head to which they apply.) And if there is an extremely productive and "easy" shift of the noun that would make it easy to satisfy the Non-Vacuity Principle, as in the case of the "representations" in *wooden horse,* etc., there too we can override the Head Primacy Principle.

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[5] "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." (Kamp and Partee 1995, p.161, fn.23)
[6] In fact, in the literature on prototype theory, one can observe that many of the reported experiments on judgments of prototypicality are carried out with pictures of objects rather than actual objects, but all of the language of the experiments and of the discussion of the experiments refers to the corresponding objects, not to pictures of objects. And normally we don't even notice; starting with our children and their picture books, we say things like, "Where's the doggy? There's the doggy!" Presumably no normal parent would say "Where's the picture of the doggy? There's the picture of the doggy!"

And I would suggest that no adjectives are privative. "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.[7]

One surprising piece of data that remains in the Polish facts is that the adjective corresponding to English *past* does allow NP splitting and can occur in predicate position. This calls for further investigation: perhaps Polish *past* is different from English *former* in allowing a corresponding expansion of the extension of the noun it applies to. There are certainly unclear cases in English: witness the uncertainty in classifying *retired, dead* as intersective vs. privative. Probably the line is not sharp because the extension of nouns is quite 'adjustable', as I first became aware in the course of listening to Hans Kamp's lectures on tense and modality at the Linguistic Institute at the University of Massachusetts in the summer of 1974. I will close with an example which is my reworking, I think, of the kind of case study he was illustrating at one point in the lectures.

When thinking about a question like (22a) below, there is in normal circumstances no temptation to include dead poets. Note that it's not that the predicate *poet* by itself presupposes that the entities it applies to are alive, since we readily talk about anthologies of works by 18th century poets, and we don't usually refer to them as dead poets or former poets or ex-poets (the movie title *Dead Poets Society* has the feel of an intentionally surprising phrase). And *be in Amherst* cannot be said to presuppose that the entities it applies to are living animate entities. Yet the combination of *poet* with an extensional present-tense predicate together carries at least a very strong implicature that we are to count "live" poets. But exactly the opposite is true for question (22b), since the predicate *are buried*, discounting ghoulish situations, when combined with a subject noun phrase that (normally) denotes an animate being, normally presupposes that the 'animate entities' it applies to are dead.

(22) a. How many poets are there in Amherst?
      b. How many poets are buried in Amherst?

The conclusion from such examples seems to be that whether the extension of a noun like *poet* at a given time includes only poets living at that time or both living and dead poets is highly dependent on the rest of the context, and easily shifts. Similar examples can easily be multiplied, and there may well be other phenomena that should be looked at in a similar light[8]. Bennett (1974) observed that Montague's list of intensional verbs contained verbs of two different sorts. The typical intensional verb in Montague's list was *seek*, which exhibits

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[7] Meredith Landman (2000) is working on an even stronger proposal, developing the claim that apart from the modal adjectives, all apparent departures from intersectivity result either from context-sensitivity (as with *tall*) or from implicit additional arguments/parameters (as with *skillful, good*).

[8] Bennett (1974) observed that Montague's list of intensional verbs contained verbs of two different sorts. The typical intensional verb in Montague's list was *seek*, which exhibits all the classic opacity properties. But Montague's list also included *worship* and *remember,* and Bennett noted that an indefinite object with those verbs is always interpreted as "specific", not "non-specific"; the only sense in which it is "intensional" is that the object in question need not exist at the world and time of the worshipping or remembering. It might be fruitful to consider these verbs as ones which sometimes coerce expansion of the domains in which their direct objects are interpreted rather than as intensional.

all the classic opacity properties. But Montague's list also included *worship* and *remember,* and Bennett noted that an indefinite object with those verbs is always interpreted as "specific", not "non-specific"; the only sense in which it is "intensional" is that the object in question need not exist at the world and time of the worshipping or remembering.

If the hypothesis proposed in this section can be maintained, then the classification of adjectives would be much more neatly constrained. Adjectives would still be functions from properties to properties in the most general case, but in harmony with the traditional notion of *modifiers*, they would normally be constrained to be subsective. We still need to allow for the 'modal' adjectives, which are not so constrained; the Polish data would provide fuel for a proposal to consider them syntactically as well as semantically distinct. I have said nothing to help with the problem of how to constrain the nonsubsective adjectives to just the kinds of 'modal' adjectives which actually occur and not allow random nonsubsective functions: this challenge is raised in (Heim 1999), and I have no solution to it. But if we can exclude privative adjectives completely, that would be one step in the direction of constraints. 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 note.

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(Davidson and Harman 1972)

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