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Laurence R. Horn
Yale University

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AMBIGUITY, NEGATION, AND THE LONDON SCHOOL OF PARSIMONY

LAURENCE R. HORN

YALE UNIVERSITY

In a series of recent papers, including Kempson (1979, 1980, 1982), Cormack (1980), Kempson & Cormack (1981, 1982), and Burton-Roberts (to appear), Ruth Kempson and her colleagues--henceforth the London School of Parsimony--have advanced a major new theory of ambiguity and negation whose structure is outlined in (1)-(7) below:

- (1) Russell's familiar ambiguity for negation, as in the stock example (1a), with its logical forms (1b) and (1c) distinguished by scope,
- (1a) The King of France is not bald.
- (1b) INTERNAL = The King of France is non-bald.
 $\exists x(Kx \ \& \ \forall y(Ky \rightarrow y=x) \ \& \ \sim Bx)$
- (1c) EXTERNAL = It is not the case that the King of France is bald.
 $\sim \exists x(Kx \ \& \ \forall y(Ky \rightarrow y=x) \ \& \ Bx)$
- is a privative opposition in that one understanding (the internal negation (1b)) entails the other (the external negation (1c)) but not vice versa.¹
- (2) Privative oppositions cannot be demonstrated by linguistic tests to involve a true semantic ambiguity.²
- (3) Ceteris paribus, an analysis which posits ambiguity is to be rejected in favor of one which does not. (This is the Modified Occam's Razor principle (Grice 1978: 118) or Occam's eraser (Ziff 1960: 44): Do not multiply senses beyond necessity.)

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- (4) Hence, privative ambiguities do not exist; or, if they do,
 (4') The only privative ambiguities which exist are predictable by rule, specifically those involving marked/unmarked lexical oppositions.
 (4'') The putative ambiguity of negation is not predictable in this way.
- (5) Hence (from (1) and either (4) or (4'')) negation is not ambiguous; (1a) does not have two separate senses corresponding to the understandings (1b) and (1c). Negative statements are semantically unspecified, vague, general, or non-specific as between internal and external understandings.
- (6) If negation is not ambiguous, the noncontradictory status of (6a) Justin didn't eat three carrots--he ate four. requires that the strengthening of cardinal numbers (from 'at least n' to 'exactly n') be part of truth-conditional meaning, not pragmatics (cf. Cormack 1980, Kempson 1982).
- (7) Analogously, all weak scalar operators (e.g. some, or, possible, happy, warm) are likewise logically ambiguous between weak and strong senses.

Retracing the last few steps of the argument, it is well known that scalar operators like the cardinal three in (8a) allow weaker and stronger understandings, here (8b) and (8c) respectively.

- (8)a. Justin ate three carrots.
 b. Justin ate at least three carrots.
 c. Justin ate exactly three carrots.
 d. Justin didn't eat three carrots.
 e. Justin didn't eat at least three carrots.
 (= he ate fewer than three)

On the standard pragmatic analysis employed informally by Mill (1867) and DeMorgan (1847), worked out systematically by Grice (1975), and supported by Horn (1972, 1973) and Gazdar (1979), (8c) is inferred from an utterance of (8b) by the context-dependent mechanism of Gricean conversational implicature. Negation normally affects what is said, not what is (conversationally or conventionally) implicated, so that (8d) tends to be interpreted as in (8e). But if negation is unambiguous and invariably truth-functional, as argued by the LSP (cf. (5) above), this pragmatic line on scalar strengthening must be rejected, since it cannot explain the well-formedness of (6a).³ Thus, strengthening is semantic, and (8a) is logically ambiguous. Similar arguments have been advanced by proponents of the LSP for the logical ambiguity of other weak scalar operators, based on the noncontradictory status of the negative statements in (9):

- (9)a. You didn't eat some of the cookies--you ate all of them.
 b. Maggie isn't patriotic or quixotic--she's both patriotic and quixotic. (adapted from Gazdar 1979: 82)
 c. I'm not happy: I'm ecstatic. (from Wilson 1975)
 d. It isn't warm, it's downright hot.
 e. It's not possible that mammals suckle their young, you ignoramus, it's downright necessary. (Burton-Roberts)

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Thus the LSP program trades the initially attractive parsimony of the argument from (1) to (5) for the proliferation of infinitely many logical ambiguities implied by (6) and (7), given that there are infinitely many weak scalar operators to render ambiguous. If Justin ate three carrots is logically ambiguous, so is Justin ate four carrots, and so on. Razor, where is thy sting? Parsimony, where is thy victory?

But, as I shall try to demonstrate, the earlier steps in the argument are over-Occamistic and may be both empirically and theoretically flawed. Let us begin with the LSP attack on the existence of privative ambiguity. While the burden of proof is always on the ambiguiist, this burden may not be intolerable. My procedure will be to reconsider (4'), the proposed restriction on tolerable privative ambiguity, and to instantiate lexical and syntactic instances of privative oppositions which do not fall within this restriction and must nevertheless be treated as examples of true ambiguities. Kempson (1980) presents the most detailed account within the LSP of the weakened version of the anti-privative-ambiguity position. My arguments against this account thus hold a fortiori against the more absolutist line (4) defended in other LSP manifestos.

The general constraint on sentential ambiguity Kempson seeks to maintain is that it not be invoked in cases where one understanding entails the other. She considers potential counterexamples to this strong claim which arise from what I shall dub autohyponymy. Following Lyons (1977: 9.4), A is a hyponym of B iff the extension of A is (properly) included in that of B.⁴ Hyponymy is thus the lexical counterpart of (unilateral) semantic entailment; in upward entailing contexts (cf. Ladusaw 1979a, Barwise & Cooper 1981), any proposition involving A entails the corresponding proposition involving B, but not necessarily vice versa. Thus, collie is a hyponym of dog, dog of mammal, mammal of animal, and so on; the proposition that Fido is a collie unilaterally entails the proposition that Fido is a dog.

But some words seem to be hyponyms of themselves--dog is the classic example, with two sex-differentiated hyponyms, dog and bitch. If dog represents a true case of polysemy or lexical ambiguity, it provides a prima facie counterexample to the strong form of the claim in (4), since a sentence like (10) will allow two understandings, (i) and (ii), with the former unilaterally entailing the latter.

- (10) Fido is a dog.
 (i) Fido is a male canis familiaris.
 (ii) Fido is a canis familiaris.

The noncontradictory status of (11),

- (11) That's not a dog, it's a bitch.

combined with her monoguiist line on negation, leads Kempson to concede that dog is indeed polysemous (i.e. 'autohyponymous') and (10) thus privatively ambiguous. The argument is essentially that already invoked for (6)-(9) above.

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Kempson takes such lexical fields as constituting a limiting case of (or principled exception to) her general anti-polysemy stance:

- (K1) The only cases of polysemy which arise in natural language are those which can be predicted by general rule...Polysemy is not characterized by disjunction in a single lexical item, but is only invoked in cases where the extension of meaning in question can be predicted by rule formulation from individual non-disjunctive lexical items. (Kempson 1980: 14)

She cites the concrete/abstract vacillation for nouns like book and thesis as a nonprivative instance of such rule-governed polysemy.

The governing principle for the privative cases is formulated as follows:

- (K2) If a lexical item L_1 has as its extension a set S_1 which includes the set S_2 which a second lexical item [L_2] has as its extension, and S_2 is the only lexically designated subset of the extension of L_1 along any one dimension of contrast, then the lexical item L_1 may be used to denote that subset of S_1 which excludes S_2 . (Ibid.: 15)

Kempson observes that this principle can be characterized as a restatement of the well-known semantic markedness problem: if for some general term, representing a lexical field, there is a gap in the sub-parts of that lexical field, with only one more narrowly specified lexical item, then the gap may be filled by a more specific use of the general term. (Ibid.: 15-6)

Indeed, this position seems not only plausible in itself, but reminiscent of similar functional analyses in recent work on productivity, blocking, and the lexicon by Aronoff, McCawley, Kiparsky, and others, wherein the meaning, use, or very existence of a given word or expression is affected by the existence and range of a related and more basic or specific entry in the lexicon. Some examples of this mechanism are given in (12),

- (12) fury furious *furiousity
 *cury curious curiosity
 fallacy fallacious *fallacity
 *tenacy tenacious tenacity

where the existence of a simple abstract nominal "blocks" the formation of the corresponding -ity nominal from the derived adjective (Aronoff 1976: 43ff.), and in (13),

- (13) pale red vs. pale green, pale blue, pale yellow (cf. pink)
 He caused the sheriff to die vs. He killed the sheriff
 She made the plate move vs. She moved the plate

where the appropriate use of the more productive collocation is restricted by the existence of a more "lexicalized" alternative (McCawley 1978; cf. Horn 1978b for discussion).

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Using the test frame of (11)--That's not an L_1 , it's an L_2 --Kempson provides additional cases of licensed polysemy, including those in (14):

(14)	<u>L_1</u> (the "autohyponym")	<u>L_2</u> (the more narrowly specified term)
	dog	bitch
	cow	bull
	cow	calf
	line	curve
	rectangle	square

Thus, the L_1 item cow has one sex lexically specified in its L_2 hyponym bull, so it is (correctly) predicted to have a use denoting solely female cows. Similarly, the existence of its L_2 hyponym calf, specified for age, serves to limit the domain of application of cow in other contexts to adult bovines. In fact, another well-behaved entry from the same kingdom is animal itself. In the words of Blackburn (1983: 495), "if I were talking to a biologist I would probably mean it to include human beings; if I were to use it in talking to a child (or a minister) I would probably not mean it to include human beings".

In fact, though, the phenomenon of autohyponymy proves on closer examination to be far less tractable or homogeneous than Kempson's paradigm allows. In the first place, the examples of the class in (14) do not pattern identically. Zwicky & Sadock (1975: 7-8) point out that while dog may indeed conflate two distinct (if related) lexical items, evidence indicates that lion does not, despite its opposition with lioness. Thus, (15a,b) constitute a minimal pair:

- (15)a. That dog isn't a dog, it's a bitch.
 b. ?That lion isn't a lion, it's a lioness.

Indeed, lexicographers seem to assume this very distinction, in providing separate headings for dog but not for lion. In addition, as Lyons (1977: 309) notes, cow is "less unmarked" than dog: (16a) is distinctly odd if the occupants of the field are all known to be bulls, while (16b) is fine if they're all bitches.

- (16)a. Those cows over there...
 b. Those dogs over there...

And while female dog (like female lion) is an unexceptional collocation, male cow can only be a "metalinguistic gloss".⁵

Within the human domain, some cases work the way Kempson predicts, with the prior existence of an L_2 term restricting the domain of L_1 --cf. gay vs. lesbian in (17a):

(17)	<u>L_1</u>	<u>L_2</u>
a.	gay	lesbian
b.	man	woman
c.	mankind	womankind
d.	chairman	chairwoman
e.	poet	poetess

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But, as is well known, the markedness of woman with respect to man is a rather different and more complex matter (cf. Lyons 1977: 309 for a naive view and innumerable critiques within feminist linguistics for additional commentary). In the remaining oppositions in (17), Kempson's explanation seems to assign the wrong direction of cause and effect even when she gets the right predictions. In (17c,d,e), it's the prior specialization of the general term L_1 (the "masculine usurpation of the generic") that created a perceived need for, and hence conscious innovation of, the corresponding "feminine" form L_2 . It's not the existence of sex-specific womankind, chairwoman, or poetess which is responsible for the restriction on the extension of mankind, chairman, and poet.

Another crucial variable touched on above is the degree of conventionalization of the functional principle Kempson cites: is the restriction in the denotation of the L_1 term one of meaning or just use? For me, the rectangle/square case in (14) is a clear instance of use restriction only (if at all). Thus, (18) is somewhat odd for me, and (19) hopeless (except, as Lyons would put it, as a meta-linguistic gloss).

(18) (?)That's not a rectangle, it's a square.

(19) ??That rectangle isn't a rectangle, it's a square.

Let me try to clarify the point by comparing this example with a true case of (multiple) autohyponymy--one, incidentally, about which Kempson's hypothesis has nothing to say, since no marked oppositions are involved.

The ethnographic label Yankee is standardly (i.e. in lexicographic practice; cf. McCawley 1981: 9-10) assigned the related senses in (20), proceeding from the most specific to the most general.

- (20) Yankee: a. a native or inhabitant of New England,
 b. or, more widely, of the northern States generally;
 c. a native or inhabitant of the United States generally; an American.

(Note why the (K2) markedness criterion is irrelevant here: there is no L_2 lexical item for a Northerner not from New England, nor any general simple label for a non-inhabitant of the United States.)
 How many Yankees are pictured in (21)?

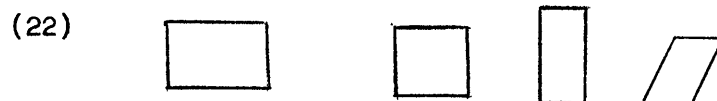


Depending on what question you take me to have asked, you might answer two (in accordance with (20a)), three (as in (20b)), or four

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(as in (20c)). Indeed, there is an even more restricted sense not considered by the OED (from which (20) is adapted) or by McCawley (1981): the interpretation under which you could correctly answer 'only one', given that JFK's Irish Catholic heritage disqualifies him from being a real Yankee, i.e. one approximating the prototype WASP of the Pepperidge Farm commercials. (Note that we may need to invoke a prototype theory--à la Rosch 1977--for the semantics of Yankee in any case, to explain why either a Vermont farmer or a Maine lobsterman is more of a Yankee than is a Greenwich stockbroker.)

But now how many rectangles are there in (22)?



For me, the only possible correct answer is three, not two.⁶ There may, however, be some individual variation here: apparently, there are speakers for whom (at least under some circumstances) squares are not rectangles, and rectangle hence a true autohyponym. A recent study of mathematics class usage concludes as much:

Most teachers want to subsume 'square' under 'rectangle' in the sense that a square is a particular kind of rectangle, but most pupils want rectangles and squares to be different, indeed distinct. (Mason & Pimm 1982: 5)

The autohyponymy of Yankee is reflected in other ethno- and geographic labels, including those of (23b-e):

- (23)a. Yankee: native or inhabitant of ((N.E.)Northern USA)USA)
 b. North American: native or inhab. of ((USA + Canada)+ Mex)
 (cf. also nordamericano)
 c. American: native or inhab. of ((USA)Western Hemisphere)
 (cf. Organization of American States, American Indian)
 d. New Yorker: native or inhab. of ((NYC)New York State)
 e. Roman (or Lat. romanus): native or inhab. of
 ((city)empire)

Here again there is no relevant L_2 to restrict the application of L_1 , e.g. no label for 'an inhabitant of New York State and not of New York City' which would suitably restrict the use or meaning of L_1 to the Gothamite.⁷

Note that while we can say that the strict sense of dog (or of rectangle) is the superordinate, including bitches (and squares), there is no unique strict sense of Yankee or of New Yorker. For trade name labels which have effectively lost their capital letters and become generics (cf. Mason & Pimm 1982), including those in (24), the strict sense is the hyponym, the derived sense the superordinate.

- (24)
- | | |
|-------------|---------------------------------|
| xerox | jello |
| kleenex | vaseline |
| Scotch tape | thermos |
| good humor | hoover (Brit. 'vacuum cleaner') |

carved out by the principle in (K2) are the intransitive verbs drink and smell. It is tempting to reason that the restricted use of drink in (29b) evolved from the general use (29a) via Gricean conversational implicatures.

- (29) drink a. 'to take liquid into the mouth for swallowing'
 (OED) (<1000)
 b. 'to partake of alcoholic beverages' (<1400)

This move seems especially warranted given the apparent nondetachability of the implicature (cf. Grice 1975), as evidenced by the parallel narrowed understandings of the synonyms of drink in English, or its crosslinguistic equivalents in other Western languages, as seen in (30):

- (30)a. quaff, imbibe, wet one's whistle ('to take a drink,
 esp. of liquor')
 b. Ger. trinken, Fr. boire, Lat. bibere, potare

But this restricted use may well develop a further degree of conventionalization of usage or meaning, as shown by the data in (31):

- (31) he {is/has} drunk (cf. Ger. er {ist/hat} getrunken); drive
 (someone) to drink; N[drink]; Fr. boisson (vs. breuvage);
bibulous 'inclined to drink'; liquor (vs. liquid)

Thus in both English and German, the semantics of the participle has split, with the verbal form retaining the general sense and the adjectival only the restricted one. (The French il a bu remains privately ambiguous.) The nouns drink and boisson more strongly force the limited understanding (29b) than do the verbs from which they are derived, and liquor, originally cognate with liquid, has certainly come under the influence (of conventionalization) over the years. Notice that the existence of innumerable entries in the sublexicon of booze did not result in the evolution of a narrowed use (or sense) of drink of the type 'to partake of non-alcoholic beverages', or in the restriction of liquor to the class of liquids not containing alcohol.

Similarly, the secondary sense acquired by smell and, even more strikingly, by its adjectival counterpart, as seen in (32) and (33),

- (32) smell_{INT} a. 'to give out, send forth, or exhale an odour;
 to have a smell' (<1175)
 (OED) (all cited exx. with PP or AP comp.)
 b. 'spec., to give out an offensive odour;
 to stink' (<1375) (often with no comp.)
 (33) smelly: 'having a smell, esp.: malodorous' (W3)
 'emitting a bad smell or smells; stinking' (OED)

did not choose to seek out a peaceful coexistence with the L₂ forms stink and stinking (or malodorous), but seem rather to have perversely decided to duplicate the olfactory extension of those forms.⁹

Finally, euphemisms like sleep with and go to the bathroom also involve the evolution of a semantically designated narrowed reading from a more general expression, once again duplicating the previously existing multitude of expressions which the euphemisms are designed to convey. Given Kempson's thesis (K2), we would predict that (34a)

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should suggest platonic bed-sharing only,

- (34)a. John slept with Mary.
b. I have to go to the bathroom.

and (34b) perhaps inspection of plumbing.

We have, then, not the one well-behaved category of autohyponymy countenanced by Kempson and the LSP, namely (35a),

(35)a.	$\begin{array}{c} L_1 \\ \swarrow \quad \searrow \\ L_1 \quad L_2 \end{array}$	b.	$\begin{array}{c} L_1 \\ \swarrow \quad \searrow \\ L_1 \quad _ \end{array}$	c.	$\begin{array}{c} L_1 \\ \swarrow \quad \searrow \\ _ \quad \{L_2\} \\ \quad \quad \{L_1\} \end{array}$
	dog/bitch		Yankee, etc. (23)		temperature/fever (26)
	gay/lesbian		xerox, etc. (24)		Frau/Gattin, etc. (28)
	?rect./square		Fr. <u>parents</u> (25)		liquor/alcohol (31)
	finger/thumb		?drink (29)-(30)		smell/stink (32)
					euphemisms (34)

but an ornery array of disparate cases, including those of (35b) in which there is no relevant L_2 term by which the use of L_1 can be restricted, and those of (35c)² where there is indeed a previously existing L_2 term--yet the autohyponym crowds into the semantic space already occupied by that term rather than slipping into the space left vacant. The markedness thesis of the LSP sometimes works for us, sometimes against us, and sometimes it just seems irrelevant.

Nor does the situation improve when we leave autohyponymy behind and venture into the realm of structural ambiguity. Perhaps the clearest embarrassment for the LSP repudiation of privative ambiguity would be the discovery of a sentence with two mutually entailing yet semantically distinct interpretations. Kempson has entertained this possibility in connection with the ambiguous sentence (36),

- (36) They are visiting relatives.

and shows that it does not (contra G. Lakoff, Morgan 1973, and Fodor & Sag 1980) actually permit two mutually entailing readings (Kempson 1979: 291). But, as Abbott (1980) has observed, Kempson's argument on (36) does not preclude the existence of successful examples of this type; among the candidates for this status are the sentences in (37):

- (37)a. A student in the syntax class cheated on the final exam.
b. I told a story about John.
c. Someone is renting the apartment.
d. The baby is too sleepy to nurse.
e. The wood is too wet to burn.
f. Someone is interviewing for the syntax job.

(37a), according to Fodor & Sag (1982: 355-6), "must be assigned two distinct semantic analyses that are associated with the same truth conditions", based on what they take to be the referential/quantificational ambiguity for indefinite NPs. They defend this admittedly "Occam-defying analysis" by citing a precedent, (37b), which will be assigned two syntactically distinct (and, presumably, semantically distinct) but truth-conditionally identical analyses.¹⁰ (37c), due I believe to Jerry Morgan, exhibits two interpretations which, while

mutually entailing, are distinguishable at the level of thematic (or deep case) relations, a.k.a. θ -roles: the subject can be lessor or lessee, with the party of the second part unspecified. In (37d), the baby can be understood as object of transitive nurse (= 'too sleepy for one to nurse it'--cf. The patient is too heavy to lift), or as subject of intransitive nurse (= 'too sleepy for it to nurse'--cf. The patient is too weak to live). The same dichotomy arises in other examples with "middle" and "ergative" verbs (cf. Keyser & Roeper 1983), e.g. (37e,f). In all the cases of (37), of course, there is no "more general understanding" to appeal to, and to derive the specific reading from, since each of the two readings entails the other.

Related to the example in (37c), we find instances in which an interpretation of a sentence with a given assignment of thematic relations unilaterally entails an interpretation with another assignment: in Chris frightened (amused, disgusted,...) the baby, the agentive reading for Chris unilaterally entails the non-agentive source reading (i.e. the simple causative). While such an ambiguity is indeed privative, it may be derivable by rule (given its productivity) and thus subsumable within the broad rubric of the escape clause (K1).

It is perhaps in the area of scope ambiguities that the LSP attack on privative ambiguity makes the strongest claims--and probably the most dubious. Characteristically, the LSP approach (cf. especially Kempson 1979) seeks to solve an extremely intricate semantic issue--the representation of opaque or intensional contexts--by fiat, and without the crucial supporting argumentation. While a particular instantiation of the opaque/transparent ambiguity may well be privative--like (38a), where the transparent (i) unilaterally entails the opaque (ii)--related cases such as (38b,c) do not involve privative ambiguity.

- (38)a. John is trying to find a unicorn.
 (i) $\exists x(\text{unicorn}(x) \ \& \ \text{try}(\text{John}, \text{find}(\text{John}, x)))$
 (ii) $\text{try}(\text{John}, \exists x(\text{unicorn}(x) \ \& \ \text{find}(\text{John}, x)))$
 b. John would like to marry a girl his parents don't approve of. (Partee 1972; Reeves 1975; Abbott 1980)
 c. Oedipus wanted to marry his mother.

Work by Partee (1972, 1974), Reeves (1975), Abbott (1980), Farkas (1981), Fodor & Sag (1982), and others (cf. the Heny 1981 anthology) has shown that neither the wide-scope, de re, transparent reading nor the narrow-scope, de dicto, opaque reading is consistently more general or weaker, unilaterally entailed by the other. If we seek a unified treatment for the phenomena of intensional contexts, as Abbott and Farkas have stressed, the arbitrary elimination of dual representations for (38a) merely complicates our task.

Consider now the perennial any question: do the two occurrences of any in (39a) and (39b) represent a difference between existential and universal quantifiers, or between different scope assignments for the same quantifier?

- (39)a. I didn't see anything.
 b. Anything can happen.

Reichenbach (1947), Quine (1960), Klima (1964), Vendler (1967),

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Smith (1971), Lakoff (1972a), Jackendoff (1972), Horn (1972), LeGrand (1974, 1975), Fauconnier (1978), Hintikka (1977), McCawley (1977), Ladusaw (1979a,b), Carlson (1980, 1981), and Davison (1980) are among the almost transfinite number of linguists and philosophers who have wrestled with this question, with what success I shall not attempt to evaluate. I myself have managed to defend both views within a single dissertation (Horn 1972: §2.35 vs. §3.1), coming to rest on the scopal analyses in (i) and (ii) for disambiguating (39'a):

- (39')a. John can't marry anyone.
 (i) = 'There isn't anyone John can marry'
 $\forall x \sim \Diamond M(j,x)$ or alternately $\sim \exists x \Diamond M(j,x)$
 (ii) = 'John can't marry just anyone'
 $\sim \forall x \Diamond M(j,x)$ or alternately $\exists x \sim \Diamond M(j,x)$
- b. He won't date anybody.
 c. Can anyone lift that rock?
 d. If anybody can swim the channel, I can.

Since the former unilaterally entails the latter, this is a privative ambiguity. Indeed, the ambiguity in (39'a)--and that in (39'b-d) as well--is privative whether or not any is itself a polysemous lexical item. But it's not clear what we have gained by ruling it out, as the LSP requires us to do.

As a number of the aforementioned writers have noted (cf. also Kamp 1978), or manifests the same apparent ambiguity as any in DeMorgan contexts like (40a) and modal contexts like (40b).

- (40)a. He doesn't eat meat or fish.
 (i) = He eats neither meat nor fish.
 (ii) = (He doesn't eat meat) or (he doesn't eat fish)--
 I have forgotten (or won't tell you) which.
- b. Sue or Lou can answer that question.
 (i) = for $x \in \{\text{Sue, Lou}\}$, x can answer that question
 (ii) = (Sue can answer it) or (Lou can answer it)--
 I have forgotten (or don't know) which.

Assuming (as in the case of (39'a)) that only the more general (ii) readings are assigned by the semantics, it's again not clear where we go from there.

The privative opposition displayed by conjunctions is of a rather different sort. For examples like (41),

- (41) Sam and Mary had a baby and (they) got married.
 (i) = ...and then... ("asymmetric" conjunction)
 (ii) = ...and also... ("symmetric" conjunction)

I have argued (Horn to appear: note 18)--with Grice (1975), Wilson (1975), and Schmerling (1975), and against Cohen (1971), Bar-Lev & Palacas (1980), and McCawley (1981)--that the asymmetric temporal understanding (i) is derived pragmatically from the symmetric understanding (ii) through a conversational implicature arising from the maxim Be orderly (Grice 1975). So far so good, unless Cohen et al. are right and the rest of us are wrong.¹¹ But related examples like those in (42a),

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- (42)a. I went to the store and bought some beer.
 b. The beer which I went to the store and bought...

as Ross (1967) and Schmerling (1975) have shown, are semantically and syntactically distinct from true conjunction--note the apparent co-ordinate structure constraint violation sanctioned in (42b). Yet an LSP-style syntax and semantics cannot assign the asymmetric reading directly, since it is unilaterally entailed by the symmetric reading. If my intuitions are correct, (43a) allows a symmetric understanding while (43b) does not.

- (43)a. I want you to go and buy yourself a new hat.
 b. I want you to try and find a new hat.

This suggests that the LSP would assign an asymmetric reading to the latter (as its only reading), but not to the former (where it would be derived somehow from the non-salient but forceable symmetric interpretation). This again seems arbitrary and probably wrong.

Another privative ambiguity of conjunction which the LSP credo rules out by fiat is the scope distinction in agentive phrases noted by Gazdar. In his example and his notation, a sentence like (44) will receive the two interpretations (i) and (ii), the former entailing the latter (Gazdar 1982: 165-7):

- (44) John was attacked and bitten by a vicious dog.
 (i) conjunction under V:
 $\bar{V} [V [\text{attacked and bitten}] \bar{P} [\text{by a vicious dog}]]$
 (ii) conjunction under \bar{V} :
 $\bar{V} [\bar{V} \text{attacked and } \bar{V} [\bar{V} \text{bitten } \bar{P} [\text{by a vicious dog}]]]$

As before, a special device must be invoked by the LSP to block this ambiguity from arising in the first place, and another (pragmatic) device assumed for reconstructing the narrow understanding (i).

But probably the most sacred syntactic ambiguity that would be brutally savaged by the LSP is the structural ambiguity illustrated by the alternate bracketings of expressions like (45):

- (45) old men and women: (a) [old men] and women
 (b) old [men and women]

While there is nothing inherently privative about this most popular of ambiguities, it may be in effect neutralized into a privative ambiguity in particular semantic contexts. Note that every member of the set defined in (45b) is a member of the set corresponding to (45a), but not vice versa. Consider now (46)-(48), representing--in order--an "upward entailing" context with a "monotone increasing" quantifier, a "downward entailing" context with a "monotone decreasing" quantifier, and a neutral context with a non-monotone quantifier (cf. Barwise & Cooper 1981; Ladusaw 1979a).

- (46) There were at least 20 old men and women in the room.
 (47) There were at most 20 old men and women in the room.
 (48) There were exactly 20 old men and women in the room.

In (46), the reading assigned by the (b) bracketing unilaterally entails that assigned by (a). Thus, by general LSP criteria, only the

weaker (45a) bracketing can be assigned semantically. In (47), the (a) reading unilaterally entails the (b) reading, so only the latter is directly represented semantically. Needed, in addition, are two mirror-image or complementary sets of pragmatic strengthening rules to derive the non-assigned reading in each case. In (48), where neither reading entails the other, both bracketings must be given semantically and no additional strengthening devices are operative. I suggest that this complication of an intrinsically simple ambiguity is solely an artifact of the LSP program and its unjustified banishment of privative ambiguity.

A further potential problem for this program is that, given the central role played by entailment in determining the "logical dependence" between readings which results in the privative status of a given ambiguity, the assignment of semantic representations must endure the thousand unnatural shocks that logical entailment is heir to. As is well known, a WH complement like that in (49) is ambiguous between the embedded question reading (a) and the free relative reading (b).

- (49) I know what you know.
- a. EQ (= I realize what it is that you know)
For all x such that you know x, I know that you know x.
 - b. FR (= I know whatever you know)
For all x such that you know x, I know x.

But in (50) the free relative reading is tautologous, while in (51) it's contradictory:

- (50) You know what you know.
- a. EQ: For all x such that you know x, you know
that you know x.
 - b. FR: For all x such that you know x, you know x. (TAUT.)
- (51) You don't know what you know.
- a. EQ: It is not the case that for all x such that you
know x, you know that you know x.
(= You have tacit knowledge)
 - b. FR: It is not the case that for all x such that you
know x, you know x. (CONTRADICTION)

Given that a tautology is entailed by any proposition, while a contradiction entails all propositions, the ambiguity of (50) and (51) is privative and must be eliminated. (50) will be assigned only its weaker, tautologous FR reading (50b), while (51) gets only its weaker reading, the contingent EQ (51a). In each case, a special filter must be invoked to wipe out the stronger reading, and separate mirror-image stories told for how that stronger understanding is inferred (when it is)--unless, of course, the two yous in (50) or (51) have distinct referents (You, Charlie, know what you, Sam, know), in which case the ambiguity is no longer privative and the missing readings re-emerge.

This problem arises whenever a sentence receives two understandings, one of which is logically true or logically false. Other

instances are (52) and (53),

- (52) If I went to the bank, I went to the bank.
 (53) Anyone who can bear children can bear children.

where the two (salient) tautologous understandings in each case will be directly generated, but must also be somehow persuaded to yield the (nonsalient) "crossed" readings. It is possible, although not obvious, that the LSP can deal with this embarrassment by extending the notion of rule alluded to in (K1), or perhaps by refining the notion of entailment relevant for determination of privative ambiguity; it seems that a more natural and general solution, however, is just to let these ambiguities arise (cf. Fodor & Sag's comment cited in note 10). Whether a given instance of the ambiguity will turn out to be privative is then predictable from the context.

The final class of cases we shall consider involve putative syntactic ambiguities stemming from negation. Consider, first of all, the status of sentences like (54a):

- (54)a. I don't think the Yankees will win.
 b. I think the Yankees will not win.
 c. It is not the case that I think the Yankees will win.

The syntactic rule of negative transportation or neg-raising popular a few years back would derive (54a)--on its relevant "strong" reading--from a source with embedded negation. Since (54a) allows not only this stronger reading, co-derived with (54b), but also the weaker understanding (54c) unilaterally entailed by it, it seems to constitute a case of privative ambiguity. Indeed, even if we were to reject the syntactic neg-raising rule in favor of an interpretive analogue of "neg-lowering", the same privative ambiguity would have to be posited. Since the status of a given predicate with respect to its neg-raising abilities is not semantically predictable (i.e. neg-raising, or semantic neg-lowering, is a lexically governed operation --cf. Horn 1978a for extensive discussion), the privative opposition exhibited by (54a) seems to involve a true ambiguity, and hence a problem for the LSP. But the problem may dissolve itself, if we can motivate a pragmatic approach to the neg-raising phenomenon. I have argued elsewhere (Horn & Bayer, to appear) that (54a) is not semantically ambiguous, and that the strengthening rule licensing the inference of (54b) in context is a short-circuited conversational implicature. Such an approach poses no threat to the LSP. (The scalar cases already discussed, including those in (9), also appear to violate the constraint against privative ambiguity; thus, (8a) is privatively ambiguous since its (8c) reading unilaterally entails its (8b) reading. But these cases involve rule-driven autohyponymy and hence conform to the escape clause in (K1).)

The case of know, however, is more problematical. As Gazdar has noted (1979: 142), if negation is not ambiguous know apparently must be in order to distinguish the two possible interpretations of (55a,b):

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- (55)a. John doesn't know that he can trust you.
 b. I don't know that I can trust you.

The understandings available for such sentences are given in (55'), in the notation of Hintikka (1962):

- (55')(i) $p \ \& \ -K_{ap}$ ('p but a does not know that p')
 (ii) $-K_{ap}$ ('a does not know [for a fact] that p')

The "factive" understanding (i) here unilaterally entails the more general nonfactive understanding (ii). In (55b), of course, the factive version is self-defeating (although not logically contradictory, as Hintikka points out) and only the weaker (ii) reading emerges.

Since the opposition between (55'(i),(ii)) is privative, no ambiguity can exist here for proponents of the LSP; only the weaker nonfactive understanding is semantically assigned. Indeed, two fellow-travellers of the LSP, Atlas (1975) and Harnish (1976), have offered stories for how the stronger reading (i) will be inferred in a given context from the assigned logical form (ii). The problem with these explanations, plausible as they might be, is that they are equally plausible for other predicates in the factive class--including regret, and especially realize, which is semantically akin to know. Yet (56a,b) do not share the apparent ambiguity of (55a).

- (56)a. John does not regret that Mary left.
 b. John does not realize that he can trust you.
 c. #I don't realize that I can trust you.
 d. Do you { know } that Lee has been unfaithful?
 { realize }
 e. Do you { know } what time it is?
 { realize }

In particular, (56b,c) allow no nonfactive understanding and the latter, unlike its counterpart in (55b), is thus "epistemically indefensible", in the words of Hintikka (1962). It's not clear what motivates this difference between know and realize; perhaps it is in some way related to the fact that in (56d,e) the versions with know can be real questions, while those with realize can only constitute indirect assertions (cf. Morgan 1973). In any case, the anti-ambiguist line on (55a) remains at best a promissory note.

We have seen that privative ambiguities cannot be eliminated by fiat (as in (4)), or confined to a limited lexical subdomain (as in (4')). The range of autohyponymous lexical items is wider and more heterogeneous than the LSP approach allows. On the sentential level there may be no "more general understanding" to appeal to; when there is, otherwise cogent arguments for assigning two logical forms to a given construction must be rejected a priori when a given ambiguity turns privative. Readings vanish, and must be mysteriously reconstituted by ad hoc semantic or pragmatic rules of dubious character.

The real problem, I believe, is that the LSP confuses an epistemic issue--can we develop operational criteria for determining whether p is the case?--with an ontological one--is p the case? But

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what if the attack on privative ambiguity is broken off? What if we give up "the proposed restriction that no sentence be assigned two distinct semantic representations if one interpretation is logically dependent on the other" (Kempson 1980: 16)? There remains, then, no compelling metatheoretical argument for homogenizing negation.

I have argued at length in a recent paper (Horn, to appear) that negation cannot be treated as a unified truth-functional phenomenon, and that the negatives instantiated in (1c), (6a), and (9), recalled here,

(1c') The King of France is not bald--there isn't any King of France.

(6a) Justin didn't eat three cookies--he ate four.

(9)a. You didn't eat some of the cookies--you ate all of them.

d. It isn't warm--it's downright hot.

are reflexes of what I call (following Ducrot 1972) the metalinguistic use of negation. While I cannot go through the arguments, notice that the negative operator in (57), whether it is functioning as a so-called external negation (denying the existential proposition that there is a king) or as a conversational implicature canceller, fails to incorporate prefixally:

(57) The King of France is not happy-- $\left\{ \begin{array}{l} \text{there isn't any K. of F.} \\ \text{(*unhappy)} \end{array} \right. \left. \begin{array}{l} \text{he's ecstatic.} \end{array} \right.$

If negation is not operating as a truth-functional connective in the sentences of (1c'), (6a), and (9), the scalar predications it affects need no longer be considered ambiguous (as in the treatments of Cormack 1980, Burton-Roberts to appear, and Kempson 1982). While it is undeniably true that a speaker may use a sentence like Justin ate three cookies to convey that he ate only 3, or a sentence like Mary is happy to signal that she is not so much as ecstatic, this is a matter of speaker's meaning, not sentence meaning (cf. Grice 1975, Kripke 1977). Such sentences are no more semantically or logically ambiguous than the examples in (58) which similarly may be, and typically are, used by speakers to convey something not directly said.

(58) He's a fine friend \Rightarrow He isn't a fine friend.
 Who the hell wants any beans? \Rightarrow Nobody wants any beans.
 Can you pass the salt? \Rightarrow Pass the salt (please).
 Smith's murderer is insane. \Rightarrow Jones (whether or not he murdered Smith) is insane.

There is, then, no compelling reason to reject the Gricean conversationalist line on scalar operators. Indeed, I would argue--contra the London School--that it is only along this line that true parsimony can be achieved.

FOOTNOTES

¹"[Two understandings] U_1 and U_2 are PRIVATIVE OPPOSITES with respect to [some semantic feature] F if U_1 can be represented as being identical to U_2 except that U_1 includes some specification for F that is lacking in U_2 " (Zwicky & Sadock 1975: 6, citing Trubetzkoy). As

examples of privative oppositions, Zwicky & Sadock cite parent/mother and dog 'canine'/dog 'male canine'. Note that the technical term understanding is neutral as between 'sense' and '(mere) use', and that the establishment of a privative opposition between two understandings U_1 and U_2 is a pretheoretical move with respect to the semantics/pragmatics borderline, whereas a claim of privative ambiguity between two senses of a given lexical item requires specific motivation (of a sort often hard to come by; cf. note 2).

²"The logic of privative opposites makes it difficult to distinguish ambiguity from lack of specification whenever a privative opposition is in question" (Zwicky & Sadock 1975: 7). In particular, evidence from the availability of "crossed readings" with identity-of-sense anaphora is irrelevant: "The existence of the more general understanding guarantees that we will get all possible understandings" (Ibid.: 23). Atlas (1977: 326-30) disputes this conclusion, and indeed uses identity-of-sense tests to argue against the ambiguity of negation, but it seems to me that Blackburn (1983: 489-92) has convincingly answered Atlas on this point (cf. also Horn, to appear: note 4).

³Horn (to appear) presents an alternative conception of Cormack's "paradoxical negation", i.e. the negation appearing in (6a) or the examples of (9). On the view defended there, the negative marker in those examples is not assimilated to the ordinary truth-functional operator of (8d), but is instead treated as an instance of the broader phenomenon of metalinguistic negation, a way of rejecting a previous utterance on any grounds whatever, including the way it was pronounced. (I return to this point at the end of the present paper.)

⁴I shall assume here the definition of hyponymy based on proper meaning inclusion. Thus, in particular, a one-place predicate F will be a hyponym of a one-place predicate G (and G conversely a superordinate of F) just in case

$$\forall x(Fx \rightarrow Gx) \ \& \ \sim \forall x(Gx \rightarrow Fx).$$

If the qualifier proper were relaxed, and the second conjunct dropped, synonymy could be defined as mutual hyponymy; hyponymy would then be a direct lexical analogue of entailment. But then every word would be an autohyponym, since every word is synonymous with itself.

⁵Notice also in connection with the example borrowed from Blackburn that mammalhood and birdiness yield just as plausible single "dimensions of contrast", in the sense of the (K2) criterion, as does humanness--yet while animal may indeed be used so as to exclude birds in the appropriate context, it can never be used so as to exclude mammals.

⁶Conflicting testimony from the standard lexicographic sources indicates either a true dialect split here, or--if geometric figures are "natural kinds", à la Putnam (1973)--a dispute among the experts nominally responsible for holding up their end of the linguistic labor.

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For the OED a rectangle is "a plane rectilinear figure having all its angles right angles" but is "usually limited to figures whose adjacent sides are unequal, and so contrasted with square". For Webster's Third, and its progeny, a rectangle is simply "a parallelogram all of whose angles are right angles"; two illustrations are given, one of which is a square. Similarly, a rhomb (or rhombus) for the OED is "a plane figure having four equal sides and the opposite angles equal (two being acute and two obtuse)": this time the meaning, not just the customary use, excludes squares. For W3, on the other hand, a rhombus (or rhomb) is simply "an equilateral parallelogram", thus including squares. The New World Dictionary sides with its trans-Atlantic colleague against its own compatriot; its rhombus is "an equilateral parallelogram with oblique angles". To the extent that the denotation of rhomb(us) is limited by that of square, Kempson's functional principle is clearly operative. The quadrilateral fly in the LSP ointment, however, is provided by the cover term parallelogram, which, as the OED notes, is "a four-sided rectilinear figure whose opposite sides are parallel; sometimes spec. applied to a rectangle" (emphasis mine). This goes exactly counter to the functional principle, which predicts that parallelogram should, if anything, specifically exclude rectangles.

⁷ Similarly, native New Yorkers (including Brooklynites) speak of taking the subway from Brooklyn to New York (i.e. Manhattan). In the geo- and ethnographic domain, as elsewhere, specialized devices may be employed to help sort out the understandings of a given autohyponym. Proper, tout court, simpliciter, in the strict sense, sensu strictu, and their ilk are used (depending on the appropriate register) to designate the intended understanding, usually although not always the specific (hyponymic) one. Thus, Los Angeles proper excludes Van Nuys, San Pedro, and other communities "technically" part of L.A. (cf. Lakoff 1972b on the use of hedges); New York proper may be limited to Manhattan. Similarly, while linguistics may or may not include acoustic phonetics, experimental psycholinguistics, and various other applied and hyphenated subdisciplines, linguistics proper usually does not. (Proper and strict here do not imply 'literal' or 'correct', as the case of Los Angeles makes clear; like the Yankee case discussed in the text, we seem to be dealing here with an argument for the approach of prototype semantics à la Rosch 1977.)

⁸ What, then, is the current status of the hyponymic interpretation of drink in English, and its synonyms in those languages (Indo-European or non-Indo-European) spoken in cultures where (hyponymic) drinking plays an equivalent role? I would argue for an approach utilizing either the notion of short-circuited conversational implicature (i.e. a convention of usage; cf. Morgan 1978, Horn & Bayer to appear) or that of conventional implicature (Grice 1975), depending on the details of the individual case. Note that we must allow a fairly significant degree of conventionalization in usage or meaning, although this specific use is partly motivated. One can construct an imaginary state of affairs in a vegetarian (or Kosher) culture in which a verb *shmeat developed as an autohyponym with the superordinate sense 'eat (in general)' and the restricted sense (emerging in contexts like

"Do you shmeat?") designating 'eat meat' (or 'eat non-Kosher food'). Or, alternatively, we could imagine a verb arising in our own culture, call it *shkrew, whose lexical entry was 'have intercourse, esp. illicit intercourse, with'. These examples are plausible to the extent that eating meat (or *treyf*), or having illicit sex, are viewed as carrying the same guilty appeal that consumption of alcoholic beverages does in Western culture. The point is that these auto-hyponymous verbs, while conceivable, do not exist--which is precisely why conventionalization must be invoked for drink.

⁹It is not accidental that the language employed in this section has verged so often into the diachronic. Indeed, we have been implicitly describing two of the most frequently cited varieties of classical lexical change: broadening and narrowing. It is important to recognize (contra the misleading simplicity of (K1/K2)) that, as in other domains of historical linguistics, such shifts are principled and systematizable without being thereby predictable. One particularly curious instance of historical change in this area is the hand-in-hand broadening and narrowing that apparently characterized the development of dog and its hyponym hound from an earlier state of affairs in which the ancestor of dog (OE docga) denoted a particular breed of dog, thus standing as a hyponym of the general term hound, then denoting 'dog' (as its German littermate Hund still does). Sometime around the fourteenth century, when Chaucer's warning "It is nought good a slepyng hound to wake" was turning into Heywood's "It is evyll wakyng of a slepyng dog", dog and hound were presumably both autohyponyms, with slightly different specific understandings.

¹⁰The defense of such an unparsimonious analysis, Fodor & Sag point out, involves two steps. We must show

(a) that the semantic principles needed to account for the meanings of their sentences will automatically (i.e., unless specifically constrained) assign two semantic representations to the sentence in question; (b) that the principles for associating truth conditions with sentences on the basis of their semantic representations will automatically (unless specifically constrained) derive identical truth condition specifications from both of the semantic representations assigned to the sentence. (Fodor & Sag 1980: 3)

This passage is worth bearing in mind, since it applies (*mutatis mutandis*) to those structural ambiguities involving one-way entailment (i.e. the privative cases discussed in the text below) as well as to the mutual entailment cases of (37).

¹¹McCawley (1981: 6-10) adduces evidence which he claims (tentatively) supports the ambiguitist line on conjunction. He points out that a question like "Did John get up and fall down?" might be answered either "Yes" or "No" if the addressee knows John in fact first fell down and then got back up--the choice dependent on whether the questioner is understood as having asked a symmetric-and question (Did John perform those two activities?) or a consecutive-and question (Did John perform those two activities in that order?). Note that

(8a) and other scalar examples come out ambiguous by the same argument, since the question "Did Justin eat three cookies?" could be answered either "Yes" or "No" if in fact he ate four. I do not take this test to be conclusive, however, given that we often answer a question, or respond to an assertion, based on what proposition we take the speaker to have intended to convey, rather than on what proposition the speaker's words literally expressed. In the cases under discussion, the negative answers may in effect take into account the conversational implicatum associated with and and three in the original utterance, although that implicatum is not part of the literal meaning. The classical test for ambiguity in the philosophical literature (cf. Quine 1960: 27; Kempson 1982), based on whether a given sentence can be both true and false in the same state of affairs, is equally problematic when privative oppositions are involved, since we have no independent theory of truth conditions on which to rely for these cases.

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