can a not unhappy person Be called a not sad one?[1]

D. Terence Langendoen

*The Graduate Center
and Brooklyn College of
The City University of New York*

Thomas G. Bever

Columbia University

... banal statements are given the appearance of profundity by means of the *not un-* formation ... it should also be possible to laugh the *not un-* formation out of existence ... [o]ne can cure oneself of the *not un-* formation by memorizing this sentence: *A not unblack dog was chasing a not unsmall rabbit across a not ungreen field.*

George Orwell

1. ACCEPTABILITY AND GRAMMATICALITY

In this paper we present a current sample of the rationalist-structuralist approach to the study of language.[2] Specific results are discussed that may be of interest to researchers specializing in English syntax. But more important, the present investigation is an example of how to treat linguistic phenomena as the result of interactions among different systems of linguistic knowledge. We argue that certain acceptable sequences are in fact ungrammatical but they are deemed acceptable by virtue of their perceptual comprehensibility. This analysis reduces the generative potential of

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[1] An earlier version of this paper was read by Langendoen at the 1972 Summer meeting of the Linguistic Society of America under the title "Prenominal Negation in English."

[2] As pioneered by Jakobson and Halle (1956), Halle (1964), and Chomsky and Halle (1968).

universal grammatical formalisms and thus strengthens the claims made about what the child must know to be able to learn language.

The goal of a linguistic grammar is to account directly for the grammatical status and structure of sentences. Many contemporary proposals in linguistics derive critically relevant facts using the assumption that sentence grammaticality is equivalent to string acceptability. Representative samples of acceptability judgments that have been interpreted as grammatical ones are given in (1)–(4):[3]

(1) (a) *A not happy person entered the room
    (b) A not unhappy person entered the room
(2) (a) *Who did you give this book?
    (b) Who did you give this book to?
(3) (a) *Did that the guests slept late inconvenience you?
    (b) Did it inconvenience you that the guests slept late?
(4) (a) *Tomorrow I expected him to be there
    (b) Tomorrow I expect him to be there

But, as Chomsky (1965) has pointed out, sentence acceptability is to be distinguished from grammaticality: acceptability can be characterized *within* grammar "only in terms of some 'global' property that is attributable, not to a particular rule, but rather to the way in which the rules interrelate in a derivation" (p. 12). Accordingly, the decision to interpret differences in acceptability in cases like (1)–(4) as differences in grammaticality has recently led to the development of formalisms that enable one to mark sentences as ungrammatical on the basis of properties of their derivations (derivational constraints) or even on the basis of properties of potential derivations of other sentences (transderivational constraints).[4]

The unnecessary use of such formalisms will lead to a trivialization of linguistic theory: the more descriptive potential a formal device has, the less revealing it is about the specific ability it represents.[5] To accept these powerful formalisms as linguistic universals is to weaken the interest of the specific claims made about language acquisition and the antecedent properties of the child's mind. However, if there is no independently motivated theory of language performance that accounts for differences in acceptability like those in (1)–(4) one must then accept the grammatical formalisms in question.

As a case in point, let us consider sentences which have center-embedding. If sentences such as (5a) were to be classified as ungrammatical and those such as (5b) as grammatical, then the grammar of English would require at least the power of derivational constraints:

(5) (a) *I watched the man the psychiatrist my mother had worked with jump out the window
    (b) I watched the man the psychiatrist had worked with jump out the window

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[3] Examples (1) are adapted from Klima (1964), examples (2) from Fillmore (1965), examples (3) from Ross (1967), and examples (4) from Postal and Ross (1970).

[4] See, in particular, Lakoff (1969; 1970; 1971).

[5] There has been, so far, no formal proof that derivational and transderivational constraints of the kinds that have been proposed do actually increase the generative capacity of the class of grammars permitted by the theory. In fact, one can imagine derivational constraints which would restrict the generative capacity of linguistic grammars to that of finite-state grammars—for example a constraint that would limit the degree of self-embedding to some fixed finite amount (see the discussion of (5) in the text). However, it is intuitively clear that the ability to make reference at any stage of a derivation to any other stage or to make reference to other possible derivations increases the descriptive power that is available to the grammarian.

Although there is no fully agreed-upon behavioral theory that accounts completely for the difference in acceptability between (5a) and (5b), most researchers have been willing to recognize some behavioral theory[6] as sufficiently plausible so that grammatical mechanisms are not required here.

Similarly, were grammaticality the basis for the differential acceptability of English sentences such as (6) in which Relative Clause Reduction has applied, derivational constraints would be required within a grammar:

(6) (a) *The horse raced into the ring bolted
   (b) The horse ridden into the ring bolted

However, the behavioral explanation is sufficiently well documented in this case to show that (6a) and (6b) are both fully grammatical.[7] The unacceptability of (6a) is explained by appeal to otherwise motivated perceptual mechanisms.

In each of these cases, the grammar has been relieved of accounting for certain instances of differential acceptability by reference to other systems of linguistic knowledge. A considerable number of systems of language behavior have by now been isolated for study—among them, systems of rhetoric, conversational implicature, speech production, speech perception, and language acquisition. Any or all of these systems may provide a basis for acceptability differences independent of grammar. Paradigm examples have been like the case of center-embedding; that is, the unacceptability of a grammatical sentence, such as (5a), is described in terms of a behavioral process.

In this paper we shall be concerned with the problem posed by the contrast in acceptability between sentence (1a) and sentence (1b). We shall show that both (1a) and (1b) are ungrammatical but (1b) is acceptable and interpretable as a result of independently motivated processes of speech perception and conversational implicature. That is, the case of (1a) versus (1b) is one in which the acceptability of an ungrammatical string is accounted for in terms of its behavioral comprehensibility.

2. GRAMMAR OF NEGATED ATTRIBUTIVE ADJECTIVE PHRASES

Let us first examine the descriptive and theoretical problems that would be entailed by the decision to label (1a) ungrammatical and (1b) grammatical. To begin with, note that the two sentences (7a) and (7b), which correspond directly to structures underlying (1a) and (1b), do not differ in acceptability; both are fully acceptable and presumably also fully grammatical:

(7) (a) A person who was not happy entered the room
   (b) A person who was not unhappy entered the room

Therefore, there must be a restriction on either the Relative Clause Reduction Rule or the Adjective Phrase Preposing Rule to the effect that (1a) cannot be derived from (7a) but that (1b) can be derived from (7b). That the restriction must be on Relative Clause Reduction can be seen from the unacceptability of (8), the analog to (1a) in which the reduced relative clause follows the head of the noun phrase:

(8) *Someone not happy entered the room

[6] For example, Miller and Chomsky (1963), Bever (1970).
[7] See Bever (1970), Bever and Langendoen (1972).

As Klima noted, however, Relative Clause Reduction is not restricted if the adjective, besides being preceded by *not*, is also modified either by an intensifier or by a following phrase or clause, as in (9):[8]

(9) (a) A not very happy/unhappy person entered the room
   (b) Someone not very happy/unhappy entered the room
   (c) A person/someone not happy/unhappy about the recent polls entered the room

We therefore may state the restriction on Relative Clause Reduction as follows: a relative clause may not be reduced just in case it ends in the string *not* Adjective, unless the adjective is composed of a negative prefix followed by an independently occurring adjective. Formally, Relative Clause Reduction can be stated as in (10):

$$(10) \quad X \underbrace{[_s}_{1} \underbrace{\begin{bmatrix} \text{Rel} \\ \text{Pro} \end{bmatrix} \text{Tense } be}_{2} \underbrace{Y]_s}_{3} Z \Rightarrow$$

$$1 \qquad \phi \qquad 3$$

Condition:[9] Inapplicable if
   (a) $Y = not\widehat{\;}\text{Adj}_1$, and
   (b) $\text{Adj}_1 \neq [\text{Neg}] + \text{Adj}_2$
Otherwise optional

The requirement that Adjective not be analyzable into $[\text{Neg}] + \text{Adjective}_2$ is necessitated by the fact that sentences like (11) are unacceptable (hence, by hypothesis, ungrammatical):

(11) (a) *Some not insolent students want to see the dean
   (b) *Did he make a not untoward remark about me?
   (c) *His uncle left him a not dismantled clock

The input of (11) to rule (10) satisfies the condition that makes the rule inapplicable: *insolent, untoward, dismantled* are not analyzable into $[\text{Neg}] + \text{Adjective}$ since at most *-solent, -toward, -mantled* are categorized as adjective stems.

3. PROBLEMS FOR STANDARD THEORY

Upon closer examination the statement of the rule of Relative Clause Reduction in (10) turns out to be inadequate. First, note that there is an asymmetry in the acceptability judgments having to do with whether the modified element is a noun or an indefinite pronoun. We observed that (8), the analog to (1a) with an indefinite pronoun

[8] Since the intensifier *enough* follows the adjective it modifies, there may be some disagreement as to the acceptability of sentences like (a):

   (a) ?A not large enough box came with the coffeepot

We shall treat such sentences as acceptable. If it should turn out that this is the wrong decision, the rules we propose can be adjusted accordingly.
[9] The subscripts on Adjective are for convenience only, to distinguish the full adjective (e.g., *unhappy*) from the adjective that follows the negative prefix (e.g., *-happy*). The symbol [Neg] should be read "negative prefix."

as head, was, like (1a), unacceptable. However, sentence (12), the analog to (1b), is unacceptable, unlike (1b):

(12) *Someone not unhappy entered the room

Thus the second part of the condition in (10) must be dropped in case the element immediately preceding the relative clause is an indefinite pronoun (*someone*, *something*).

However generic indefinite pronouns (*anyone*, *anything*) can be modified by reduced relative clauses of any sort whatever.[10] Consider in this regard the examples in (13), all of which are acceptable:

(13) (a) Anyone not interested may leave
    (b) Anything not easy is worthwhile
    (c) Melvin dislikes anything not fattening

This relaxation of the condition, however, does not extend to generically used nouns, as illustrated in (14):

(14) (a) *Any not interested person may leave
    (b) *Any not easy project is worthwhile
    (c) *Melvin dislikes any not fattening food

Given the facts in (12)–(14), the condition on Relative Clause Reduction must be amended as in (15):

(15) Condition: Inapplicable if
    (a) $X = X^\frown N$ and $Y = not^\frown Adj_1$ and $Adj_1 \neq [Neg] + Adj_2$
    (b) $X = X^\frown \begin{bmatrix} Indef \\ Nongener \\ Pro \end{bmatrix}$ and $Y = not^\frown Adj_1$

The requirement that Adjective not be analyzable into [Neg] + Adjective₂ is not strong enough, however. Consider (16):

(16) *Sheila wants to meet a not unmarried man

Clearly *unmarried* is analyzable into [Neg] + Adjective₂, yet (16) is unacceptable. The reason, apparently, is that *married* and *unmarried* denote two mutually exclusive states. It is sufficient for Relative Clause Reduction to be blocked if an explicitly negated negatively prefixed adjective and its unprefixed counterpart do not denote two ends of a continuous scale with respect to the noun being modified.[11] Thus we must alter the condition (15) to read as in (17):

(17) Condition: Inapplicable if
    (a) $X = X^\frown N$ and $Y = not^\frown Adj_1$ and
        $\{Adj_1 \neq [Neg] + Adj_2$ or $\{Adj_1$ or $Adj_2 = [Noncontinuous]\}\}$

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[10] This was pointed out to us by J. R. Ross. See also Ross (1972, pp. 70–71).
[11] Whether an adjective is marked as continuous or noncontinuous is not always clear and perhaps may vary from person to person in some cases. Thus one can imagine a person who categorized people into exactly two classes with respect to holiness—*holy* and *unholy*. Presumably such a person would refuse to accept the phrase *a not unholy man*, whereas another person who considers there to be a holiness continuum would accept it readily.

(b) $X = X^\frown \begin{bmatrix} Indef \\ Nongener \\ Pro \end{bmatrix}$ and $Y = not^\frown Adj_1$

Even with this modification the condition is still too weak. We must also specify that Adjective₁ and Adjective₂ have exactly the same meaning, save for the contribution of the negative prefix of Adjective₁. Examples are legion. Consider (18):[12]

(18) (a) *He emitted a not unearthly scream
    (b) *Sam bought his wife some not unusual clothes

We must therefore build into the restriction on Relative Clause Reduction the additional qualification that the rule is inapplicable if Adjective₁ and Adjective₂ differ in meaning beyond the difference supplied by [Neg]. Such a qualification, however, is not statable in the theory of Chomsky (1965) (the so-called Standard Theory), assuming that *-earthly* and *-usual* of *unearthly* and *unusual* are categorized as Adjective. To avoid this impasse, we would have to assign to all negatively prefixed adjectives like *unearthly* a special bracketing, analogous to the bracketing of *insolent*, in which *-earthly* is not given the label "Adjective" but rather some special label such as "Adjective-Stem." In this way Standard Theory could account for cases like those in (18).

Such a decision, however, leads to unacceptable consequences for lexical representation and hence cannot be generally applied.[13] Consider, for example, the lexical items *healthy* and *unhealthy*. Both items are polysemous, and in some of their senses, listed in (19), they differ only to the extent supplied by the prefix *un-*:[14]

(19) (a) *healthy* (i)   in a state of good health
                    (ii) conducive to good health
                    (iii) indicative of good health or of a rational or constructive frame of mind
     (b) *unhealthy* (i) in a state of ill health
                    (ii) conducive to ill health
                    (iii) indicative of ill health or of an irrational or destructive frame of mind

Accordingly, phrases of the type *a not unhealthy* N are acceptable when *unhealthy* is used in any of the senses of (19b). But both *healthy* and *unhealthy* also have senses that are unmatched by corresponding senses in the other, as shown in (20):

(20) (a) *healthy*   (iv) sizable
     (b) *unhealthy* (iv) dangerous

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[12] Our acceptability intuitions about cases like (18) have interesting properties. At first it appears that the sentences are acceptable; then, upon reflection as to their meaning, their unacceptability emerges. Our explanation for this in terms of the general solution proposed in Section 7 is the following: the sentences contain phrases that are superficially analyzable in terms of the perceptual schema (34c), but once they are so analyzed, their interpretation is seen to be anomalous (for example, "He emitted a slightly to moderately earthly scream" for (18a)).
[13] The decision would be right only for those cases in which an adjective stem, by accident, is homophonous with a true adjective with an entirely different meaning. Neither of the cases in (18), however, strikes us as meeting this criterion.
[14] The definitions in (19) and (20) are based on the entries that appear under *healthy* and *unhealthy* in *The American Heritage Dictionary*.

The fact that *healthy* has the additional sense 'sizable' is not problematic.[15] However, the sense 'dangerous' for *unhealthy* does present a problem since phrases of the type *a not unhealthy* N, in which *unhealthy* is used in this sense, are unacceptable, as illustrated in (21):

(21) *Don't take any not unhealthy risks

To adopt the solution that *unhealthy* with the sense 'dangerous' is not analyzable into the negative prefix *un-* and the adjective *healthy* would be incorrect since this sense of *unhealthy* clearly belongs with the others.[16] Therefore Standard Theory has no mechanism to account for the unacceptability of cases like (21).

These cases do not exhaust the list of difficulties for Standard Theory. Consider (22):

(22) (a) *The bishop favored the not impious regent
     (b) *Maude wants to marry a not impotent man

Semantically, the relation of *impious* to *pious* (similarly, *impotent* to *potent*) is that of *unhappy* to *happy*: they mean the same save for the contribution of the negative prefix. But phonologically they differ in the quality of the first vowel. Using Chomsky and Halle's (1968) informal spelling, *pious* is *pIous* and *-pious* is *-pEous*. The E of *-pEous* is derived from underlying *-pIous* by a laxing rule (and a subsequent rule which tenses vowels in prevocalic position). The laxing rule applies to a vowel which immediately follows a stressed syllable and which is not the final syllable in the word. Formally, the rule is (23):[17]

(23) $V \rightarrow [-\text{tense}] \; / \; [+\text{stress}]C_0 \underline{\quad} C_0 V$

The effect of rule (23) can also be seen in such examples as *infinite* (from *in+fInIt*—compare *finite*), *barometer* (from *baro+mEter*—compare *meter*), *relative* (from *relAt+ive*—compare *relation*), *bicycle* (from *bI+cIcle*), and *maturation* (from *matUr+ation*—compare *mature*).

Consequently, *pious* and the *-pious* of *impious* do not differ in their systematic phonemic representation: both are represented *pIous*. But if *pious* and *-pious* have the same meaning and are represented alike phonologically, how can Standard Theory account for the unacceptability of (22)? The relevant factor, clearly, is that the two forms differ phonetically as a consequence of the application of the laxing rule in *impious*. However, Standard Theory cannot make reference to that difference in the formulation of a restriction on a syntactic transformation. And even if it could, there would be no way of referring to the pronunciation of the adjective *pious* in a derivation of a sentence that contains only the adjective *impious*. The constraint would have to

refer to a quasi-phonetic form that does not appear in the derivation of the sentence in question, a possibility that does not exist within Standard Theory.[18]

One could argue that condition (17) handles most of the cases and that the remaining problems can be listed as idiomatic exceptions to the rule of Relative Clause Reduction. But such a list would provide no explanation of why just these cases are exceptional.

4. A SOLUTION WITHIN GENERATIVE SEMANTICS

Having shown that Standard Theory is incapable of providing a natural account of negated attributive adjective constructions, we will now demonstrate that Generative Semantics is more than adequate to the task. This should not be surprising, given the fact that the theory permits reference to all stages of a derivation at any given stage (derivational constraints) and even to other possible derivations (transderivational constraints).

Recall the problematic cases for Standard Theory, which are illustrated in (18), (21), and (22). In (18) we find examples like *unearthly* and *unusual*, in which the meaning of the full adjective is different from the compositional meaning of the negative prefix and the adjective that follows it (*-earthly* and *-usual*). One possible treatment for such cases within Generative Semantics is to specify a constraint that noun phrases of the type $X \; \widehat{not} \; \text{Adjective}_1 \; \text{Noun}$, where $\text{Adjective}_1 = [\text{Neg}] + \text{Adjective}_2$, are ill-formed just in case the material that corresponds to Adjective_2 in a derivation of a noun phrase of the type $X \; \widehat{\text{Adjective}_2} \; \text{Noun}$ is different from the material that corresponds to Adjective_2 in the original derivation or in case there is no derivation that leads to a well-formed noun phrase of the latter type.[19] The constraint is both derivational (requiring simultaneous reference to a stage preceding lexical insertion and a stage following relative clause reduction) and transderivational (requiring reference to other derivations or to the nonexistence of other derivations of a certain type).

The case of (21) would receive a similar treatment. Prior to lexical insertion, the material corresponding to *healthy* in the derivation of (21) would be the structure corresponding to the notion 'safe'. This semantic structure is not one of the possible prelexical structures underlying *healthy* in the derivation of the corresponding sentence (24):

(24) *Don't take any healthy risks

Thus (21) is ill-formed.

Finally, consider (22). To account for the unacceptability of this type of sentence, we would simply add to the transderivational part of the constraint that Adjective_2 in the phrase $X \; \widehat{\text{Adjective}_2} \; \text{Noun}$ is phonetically the same as Adjective_2 in $X \; \widehat{not} \; [\text{Neg}] + \text{Adjective}_2 \; \text{Noun}$ after the application of the morphophonemic rules of vowel laxing.

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[15] For some people, however, *not unhealthy* may acceptably be used to mean 'slightly to moderately sizable', as in (a):

     (a) The president fled to Venezuela with a not unhealthy share of the profits

The significance of this fact is discussed in note 29.

[16] Roughly, we may say that the sense 'dangerous' for *unhealthy* is derivable from the sense 'conducive to ill health' by generalizing the notion 'ill health' to 'harm'. Such a generalization, however, does not obscure the underlying relation of *unhealthy* to *healthy*.

[17] Rule (23) is obviously related to Chomsky and Halle's rule (118d), the last line of their Auxiliary Reduction Rule I (1968, p. 125), which they develop to handle the reduction of the penult in words like *advisory* (from *advise+Ory*). What our discussion shows is that their rule (118d) has a more extensive application than they supposed.

[18] See examples (d)–(g) in note 28 for other cases of this sort.

[19] A generative semanticist could argue that his approach to this situation enables one to avoid the ad hoc and arbitrary maneuver of considering *-earthly* and *-usual* to be adjective stems other than adjectives. For other arguments that claim that Generative Semantics offers an alternative to "arbitrary syntax," see Lakoff (1972) and Postal (1970).

5. A SOLUTION WITHIN EXTENDED STANDARD THEORY

Since the description of the cases under consideration appears to involve the full panoply of power available to Generative Semantics, it is surprising that the Extended Standard Theory (Chomsky (1971)), with one modification, can also account for these cases. It is not usually supposed that the Extended Standard Theory provides as much increased descriptive latitude over the Standard Theory as does Generative Semantics. However, all that must be assumed is that reduced relative clauses receive their semantic interpretation (including semantic amalgamation with the head noun) following the rule of Relative Clause Reduction rather than in deep structure.

This assumption is not unreasonable in view of the possibility that there are real, though subtle, differences in interpretation assigned to the object noun phrases in (25a) and (25b):

(25) (a) I see an elephant that is small
     (b) I see a small elephant

To see these differences, suppose that (25a) and (25b) are the first premises of the two arguments whose second premises are given in (26):

(26) (a) An elephant is an animal
     (b) An elephant is an animal

Substituting *animal* for *elephant* whenever it appears in (25), we obtain (27):

(27) (a) I see an animal that is small
     (b) I see a small animal

For many people, (27a) would be considered a valid inference from (25a) and (26a), but (27b) would be considered an invalid inference from (25b) and (26b). Thus it would appear that (25b), which is derived from the structure that also underlies (25a) by Relative Clause Reduction and Adjective Preposing, differs semantically in an ever-so-slight way from (25a).[20]

Suppose, then, that we accept the view that there is a surface interpretation of

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[20] We believe, however, that the difference in interpretation between full and reduced relative clauses is rhetorical rather than semantic. That is, both (25a) and (25b) are ambiguous: the substitution of *animal* for *elephant* leads to a valid conclusion in one reading and to an invalid one in the other, and this is true for both examples. The reduced relative clause structure simply highlights the reading in which the substitution leads invalidly to the conclusion. This is so because the surface string Adjective Noun gives perceptual salience to the interpretation in which the adjective is to be judged in relation to the noun rather than in an absolute sense (that is, "small for an elephant"); the surface string in which the adjective is separated from the noun by the relative pronoun and the copula gives salience to the absolute interpretation of the adjective. This case is very much like that of sentences containing two quantifiers for which there is a preferred reading based on which quantifier comes first, as, for example, in *Many arrows hit few targets* and *Few targets were hit by many arrows*. Indeed it may turn out that all of the central cases motivating semantic sensitivity to surface structure can be explained by mechanisms outside the grammar. (See Katz (1972, Chapter 8).)

Adjective-Noun combinations in English, and suppose that we are faced with the question of how to interpret the surface noun phrase configuration (28):

(28)

$$ADJ_1$$
$$X\ not\ [NEG] + ADJ_2\ N$$

We proceed as follows. First we determine the senses of Adjective$_1$ that are compatible with the noun. We then construct the antonyms of these senses, assign the readings to Adjective$_2$, and declare that the interpretation is that of (29):

(29) X slightly to moderately Adj$_2$ N

The interpretation (29), however, is well-formed (grammatical) only if Adjective$_2$ is lexically represented as having at least one of the senses assigned to it by the interpretive rule. Given the surface noun phrases in (30), this rule would assign the interpretations in (31):

(30) (a) a not unhappy man
     (b) a not unhealthy man
     (c) a not unearthly scream
     (d) a not unhealthy risk

(31) (a) a slightly to moderately happy (in a state of emotional well-being) man
     (b) a slightly to moderately healthy (in a state of good health) man
     (c) a slightly to moderately earthly (not weird, ordinary) scream
     (d) a slightly to moderately healthy (safe) risk

Both (31a) and (31b) are well-formed interpretations since the independent lexical items *happy* and *healthy* within them have the interpretations assigned to them by the interpretive rule. But (31c) and (31d) are not well-formed since *earthly* does not mean 'not weird, ordinary' and *healthy* does not mean 'safe'.

To handle the unacceptability of phrases like *a not impious regent* in (22a), however, the Extended Standard Theory would have to have the power of examining the output of phonological rules such as (23), since the surface structure representations of such phrases would not distinguish them from acceptable phrases like *a not impossible situation*. Rule (23) is either a cyclic rule or a post-cyclic rule since it makes reference to stress placement. In either case the internal labeled bracketing would have been erased, destroying the information necessary for constructing a semantic representation. Therefore the theory would have to be modified further in one of two ways: either it would have to abandon the principle that labeled bracketing is erased after each cycle or it would have to permit the existence of derivational constraints that hold between surface structure and phonetic representation. Either choice would add descriptive power to the theory, thus reducing its explanatory capacity.[21]

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[21] Presumably, Generative Semantics and Extended Standard Theory would treat cases of phrase-incorporated *not* with predicate adjectives in a similar manner. These cases appear to be governed by the same set of restrictions that applies to the prenominal cases, as exemplified in (a) and (b):

6. A MOVE TO SAVE STANDARD THEORY

To summarize, we have shown that if we are obliged to account within the grammar for the acceptability judgments concerning negated attributive adjective phrases in English, then Standard Theory must be abandoned in favor of either the much more powerful theory of Generative Semantics or a more powerful version of Extended Standard Theory. It is clear that the problem with Standard Theory is the complexity involved in the theoretical extensions needed to make it sensitive to the internal morphology of adjectives with negative prefixes. Suppose we accept this limitation and add to Standard Theory the following universal constraint, which increases the restrictiveness of the theory: *no syntactic transformational rule is permitted to make use of the internal morphological structure of lexical items.*[22] The effect of this restriction on the statement of the rule of Relative Clause Reduction would be the elimination of that part of the condition on inapplicability that refers to the analysis of an adjective into a negative prefix and another adjective. Thus, the rule would now have the form (32):

$$(32)\quad X \text{ [}_\text{s} \begin{bmatrix} \text{Rel} \\ \text{Pro} \end{bmatrix} \text{Tense } be\ Y \text{]}_\text{s}\ Z \implies$$

$$\underbrace{\qquad}_{1}\ \underbrace{\qquad}_{2}\ \underbrace{\qquad}_{3}$$

$$1\qquad \phi \qquad 3$$

(a) Harry was often not unfriendly

(b) *Harry was often not $\begin{Bmatrix} \text{intrepid} \\ \text{impious} \end{Bmatrix}$

Generative Semantics would mark cases like (b) as ungrammatical. Extended Standard Theory would include a generalized form of the interpretive rule (28)–(29) that could apply to predicate adjective structures as well. This, however, has some unfortunate consequences for the treatment of nonechoic, noncontrastive tag question formation, which has usually been taken as a paradigmatic example of a syntactic phenomenon. Consider (c)–(f):

(c) Harry [was not] unhappy, was he?
(d) Harry was [not unhappy], wasn't he?
(e) Harry [was not] happy, was he?
(f) Harry was [not happy], wasn't he?

Presumably, the surface interpretive rule would allow sentences like (d), (f) to be generated freely with the assumption that *not (un)happy* is a constituent. Sentence (f) would then be marked as semantically anomalous by virtue of the fact that no interpretive rule applies to simple constructions of the type *not*⌢Adjective. That is, (f) would be marked as syntactically well-formed but semantically anomalous. This consequence, of course, is not further proof of the inadequacy of Extended Standard Theory but is certainly at variance with the previously well-motivated assumption that tag formation is a syntactic process.

[22] Note that feature-sensitive transformations such as Subject-Verb Agreement and polarity-adjustment rules (for example, the rule that specifies the conditions under which items like *any*, *ever*, and *at all* occur) are stated in terms of semantico-syntactic features, not word-internal morphemes. Thus the proposed universal restriction would have no adverse effect elsewhere in a Standard Theory account of English syntax. The restriction may have to be slightly modified, however, to allow for such phenomena as separable prefixes, as in German and Dutch.

Condition: Inapplicable if

$$X = X^{\frown}\left\{ \begin{bmatrix} \text{N} \\ \begin{bmatrix} \text{Indef} \\ \text{Nongener} \\ \text{Pro} \end{bmatrix} \end{bmatrix} \right\} \text{ and } Y = not^{\frown}\text{Adj}$$

Otherwise optional

Rule (32) specifies that (1a) and (1b) are both ungrammatical, despite the acceptability of the latter. This simplifies the grammar but requires an explanation of the acceptability of (1b).

7. A BEHAVIORAL ACCOUNT OF THE MEANING AND ACCEPTABILITY OF A RELATED CONSTRUCTION

In order to understand the basis for the acceptability of (1b), it is necessary to consider the mechanism for the perception of speech. Recent research has isolated various systems of this component. The most pertinent to the present discussion is a set of perceptual strategies, operations which utilize information in surface strings to assign directly their deep structure relations. Recent experimental evidence supports the view that the words in a surface sequence are first assigned their possible lexical classification.[23] Other experimental evidence supports the view that perceptual strategies are schemata which take the lexically labeled strings as input and mark them directly for deep structure relations, without processing intermediate levels of representation.[24] The best-studied example of such a strategy is one which assigns the "actor-action" relation to a clause-initial NP⌢V string (33):

$$(33)\quad \text{NP}^{\frown}\text{V} \to \text{NP}_{\text{actor}}{}^{\frown}\text{V}_{\text{action}}$$

Of course, strategies such as (33) are not rules which define well-formedness since they allow exceptions. (For example, (33) is inappropriate to passive sentences or to object-first cleft sentences, as is reflected in their relative perceptual complexity.) Rather, such operations appear to be incorporated as an early stage of perceptual processing because of their general validity.

Such strategies also apply to assign relations within phrases. For example, rules like (34) would assign a particular relation correctly in almost every case in English:

(34) (a) $\text{DET}^{\frown}\text{ADJ}^{\frown}\text{N} \to \text{DET}^{\frown}\text{ADJ}_{\text{modifier of N}}{}^{\frown}\text{N}$

   (b) $\text{DET}^{\frown}\text{ADV}^{\frown}\text{ADJ}^{\frown}\text{N} \to \text{DET}^{\frown}\text{ADV}_{\text{modifier of ADJ}}{}^{\frown}\text{ADJ}_{\text{modifier of N}}{}^{\frown}\text{N}$

   (c) $\text{DET}^{\frown}\text{ADV}_1{}^{\frown}\text{ADV}_2{}^{\frown}\text{ADJ}^{\frown}\text{N} \to$
       $\text{DET}^{\frown}\text{ADV}_{\text{modifier of ADV}_2}{}^{\frown}\text{ADV}_{\text{modifier of ADJ}}{}^{\frown}\text{ADJ}_{\text{modifier of N}}{}^{\frown}\text{N}$

The psychological interpretation for such labeled structures is a function of semantic analysis together with the analysis provided by such systems as rhetoric and conversational implicature. Consider, for example, (35):

[23] See Garrett (1970) and Conrad (1972).
[24] See Fodor and Garrett (1966), Bever (1970), and Fodor, Bever, and Garrett (in press).

(35) He has a not very expensive apartment

Its literal interpretation is paraphrased in (36); note that *not* simply negates that part of the price dimension denoted by *very expensive*:

(36) He has an apartment which is expensive to a not very extreme degree

However, the interpretation that is often given to sentences like (35) is something like (37):

(37) He has a slightly to moderately inexpensive apartment

Thus the pure semantic interpretation of (35) does not correspond to the interpretation which is more likely to be associated with it. A possible conclusion is that the proposed semantic interpretation is wrong. However, that would incorrectly entail that the pure semantic interpretation of (35) is not a possible interpretation for it.

A more promising line of investigation is provided by Grice's theory of conversational implicatures (Grice (1968)), which assigns interpretation (37) to (35) as a function of the literal interpretation (36) together with inferences based on conversational "maxims." The relevant maxim here would be that of "Quantity": *make your (conversational) contribution as informative as required.*

Suppose (35) is given as an answer to the question (38):

(38) How expensive an apartment does Horace have?

In such a case the literal meaning of (35) is an apparent violation of the maxim of Quantity: it answers a request for positive information about a continuum denoted by the unmarked adjective *expensive* with a denial of only one position on that continuum.[25] This leaves open all the other positions on the "expensive" side of the continuum—"rather expensive," "slightly expensive," and so on. Thus, the questioner is free to assume that the literal interpretation of the answer was not intended because it violates the maxim of Quantity. The task then becomes to determine the intended interpretation. The questioner may reason as follows. If the answerer had intended to communicate any specific degree of expensiveness in conformity with the maxim of quantity, then he or she would have used one of the positive adverbs (e.g., *pretty, slightly*) with the adjective in framing the answer. Thus, the questioner can assume that the answerer intended to indicate a range on the "inexpensive" side of the continuum. But that range cannot be the one denoted by *very inexpensive* since what was said was the explicit negation, namely, *not very expensive*. Hence, by exclusion, the questioner is left with the interpretation 'slightly to moderately inexpensive' as the intended meaning.

This line of reasoning and its conclusion are strengthened by an independent rhetorical principle, namely, that one should strive for parallelism: one should not answer a question using *expensive* with a construction using *inexpensive*. Accordingly, (39) as a response to (38) would be heard as slightly abrupt, almost disagreeable:

(39) He has a pretty inexpensive apartment

Thus, if in fact Horace has a pretty (but not very) inexpensive apartment, the respondent to the question (38) has the choice of either the abrupt (39) or the polite but somewhat more prolix (35).

The analysis just given correctly predicts an asymmetry in the natural interpretations of answers to questions framed in terms of marked and unmarked adjectives.

[25] It is not necessarily a violation, however, since this may be all the information that is available to the answerer, in which case to say more would be in violation of one of the maxims of Quality.

Consider the question-answer dialog (40)-(41), as compared with the dialog (38)-(35):

(40) How inexpensive an apartment does Horace have?
(41) He has a not very inexpensive apartment

Example (41) does not contain the conversational meaning 'slightly to moderately expensive' but can be taken only literally as containing the meaning 'inexpensive to a not very extreme degree'. This is so because the use of the marked adjective *inexpensive* in the question in (40) conveys the presupposition that Horace's apartment is inexpensive to some degree. The respondent in this case cannot be interpreted as denying this presupposition. Thus the questioner here would conclude that the answer is vague because the answerer could not be more precise (that is, the answerer was actually obeying the maxim of Quality).

In summary, then, we find that phrases of the type Determiner $\widehat{not}$ Intensifying-Adverb $\widehat{\text{Unmarked-Adjective}}$ $\widehat{\text{Noun}}$ have possible nonliteral interpretations which would literally be rendered by Determiner $\widehat{slightly\ to\ moderately}$ $\widehat{\text{Marked-Adjective}}$ $\widehat{\text{Noun}}$. These interpretations are consequences of the application of rules that determine conversational implicatures. Moreover, it appears to be the case that these nonliteral interpretations can be supplied by speakers even in the absence of a conversational setting. To the extent that they can, the rules have become generalized,[26] that is, they are part of a system of surface interpretive rules that are not part of the grammar of English.

8. WHY WE CAN SAY A NOT UNHAPPY PERSON EVEN THOUGH IT IS UNGRAMMATICAL

We can now explain the acceptability of sentences like (1b) in terms of the perceptual mechanisms. Consider the perceptual strategy in (34c). This operates correctly on sequences like (42) to assign the scope of the initial *not* as the following adverb:

(42) the not $\left\{\begin{array}{l}\text{very}\\\text{clearly}\end{array}\right\}$ happy boy

Since such strategies operate on a preliminary lexical-class analysis of the input as it is heard, they sometimes apply behaviorally in instances where their structural index is met only approximately. For example, consider the sentences in (43), each of which contains a negated attributive adjective, while the adjective contains an adverblike prefix.

(43) (a) Harry's not overdeveloped muscles were not up to the task
     (b) We worship a not all-powerful deity
     (c) A not supersaturated solution is what we need
     (d) They are certainly a not underdeveloped tribe

Apparently, the *not* can combine in perception with the prefixes *over-, all-, super-, under-* by the application of (34c), provided that what remains after the prefix has been removed is an adjective that plausibly modifies the noun that follows it. In (43) this proviso is met; in (44) it is not, and the examples are accordingly unacceptable:

(44) (a) *Isidor has a not overweening personality
     (b) *The not overturned decision was the basis for his case

[26] See Grice (1968, pp. 21-23).

The explanation for the acceptability of sentences like (1b) is of exactly the same form. The subject noun phrase is misanalyzed perceptually as in (34c), with *un-* being treated as a negative intensifying adverb that modifies the adjective *happy*.

Immediately most of the problematic acceptability judgments given in Section 3 receive their proper explanation. The most serious problem was that the adjective that remained after separating the negative prefix had to be perspicuous as an independent modifier of the following noun. But phrases containing negated adjectives cannot be misanalyzed in accordance with (34c) unless what follows the negative prefix is perspicuous as an adjective. If the mechanism that assigns lexical-class membership in perception cannot assign adjectival status to the element that immediately follows a negative prefix, then (34c) will not be activated.[27]

Now consider the interpretation that is given to the subject noun phrase of (1b), namely (45):

(45) a slightly to moderately happy person

Given that the negative prefix is classified in perception as an intensifying adverb (in the same class as *very*, but with negative sense), then (45) follows by virtue of the generalized conversational implicatures governing expressions of the type Determiner *not* Intensifying-Adverb Unmarked-Adjective Noun. In fact (1b) does not have a literal interpretation, but of course that is just what we would expect, since on our analysis it is ungrammatical.

9. ACCEPTABILITY AND GRAMMATICALITY—REPRISE

Our analysis of the acceptability of sentences like (1b) represents a departure from the usual assumption that if a sentence is acceptable, it is grammatical.[28] It is commonly accepted that ordinary speech behavior is filled with ungrammatical utterances that are used simply because they are behaviorally simple and comprehensible in specific contexts. On our analysis, (1b) is ungrammatical, but it is acceptable in most contexts due to the applicability of a general perceptual strategy, (34c). The methodological basis for this decision is straightforward. On the one hand, to treat such sentences as grammatical, while treating sentences like (1a) as ungrammatical, places extremely strong formal requirements on grammatical theory—in particular, a transderivational constraint that is sensitive to the output of the phonological component. On the other

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[27] See note 12 for evidence that in cases like *a not unearthly scream* in (18a) a preliminary lexical-class assignment in conformity with the left-hand side of (34c) may be made, only to be rejected because it cannot be interpreted.

The fact that phrases like *someone not unhappy* in (12) are unacceptable follows from the fact that the schema (34c) operates on pronominal modifiers. The unacceptability of *a not unmarried man* in (16) results from the anomalous character of its interpretation, 'a slightly to moderately married man'. Finally, the unacceptability of *the not impious regent* (22) results from the fact that *-pEous* is not a perspicuous representation of *pious*.

[28] One precedent for this departure is Chomsky's claim (1970, pp. 193-194) that phrases of the type (a) are ungrammatical but acceptable:

(a) his criticism of the book before he read it

However, Chomsky does not cite any independent evidence from the theory of language use to support his contention; rather, his argument is simply that since his theory (the Lexicalist Hypothesis) predicts that (a) is ungrammatical, it must be so, even if it is acceptable. More recently Otero (1972) has argued that certain Spanish sentences in which the verb agrees in number with the direct object rather than with the subject are acceptable but ungrammatical. He, too, argues that since such

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hand, the acceptability of such sentences may be accounted for in terms of an independently motivated perceptual theory. Thus we conclude that both sentences (1a) and (1b) are ungrammatical but that (1b) is acceptable because it is comprehensible.

This methodology is not only straightforward, it also offers a principled basis for the notion of "analogy" within the theory of language behavior. Our claim in Section 8 was that certain adjective prefixes may be misanalyzed perceptually as intensifying adverbs which modify the adjectives to which they are prefixed. The process of perceptual misanalysis would appear to capture what is often meant by "analogy" in linguistic discussions. We now propose that appeal to "analogy" should be restricted to cases in which the analogy is generated within the behavioral systems of language use.[29] This means that analogy may be appealed to only in those cases in which there

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factors cannot be handled within his grammatical framework, they must *ipso facto* be nongrammatical in nature.

Of course, in the absence of an independently motivated performance theory (or some other theory about a part of linguistic knowledge), the failure of a grammatical device to account for acceptability facts can be taken as evidence that more powerful devices are needed within the grammar. For example, Lakoff and Ross (1972) assume the availability of a grammatical device that is sensitive to the phonological clarity of a morphological relationship. Such a device is needed to account for the relative acceptability of sentences like (b) and (c):

(b) ?Max liquefied the metal faster than Sam could bring it about
(c) *Max killed Boris faster than Sam could have brought it about

Lakoff and Ross argue that (c) is unacceptable by virtue of a *grammatical* process that is sensitive to the clarity of the morphological relation between the causative form of the verb and the corresponding change-of-state form. Thus, *liquefy* in (b) is phonologically close to the corresponding intransitive, *liquefy*, while *kill* in (c) is phonologically distinct from the corresponding intransitive, *die*, thus rendering the sentence unacceptable. Lakoff and Ross simply assume that this unacceptability must be due to ungrammaticality and therefore that the grammar must include a device that can account for it. They use this device to explain the ungrammaticality of (c), in response to Fodor's point (1970) that (c) should be as grammatical as (b) if *kill* is actually derived from *cause to die*.

Independent of the arguments given by Fodor, there is a simpler explanation of the difference in acceptability between (b) and (c) than that offered by Lakoff and Ross. We can assume that both (b) and (c) are ungrammatical but that (b) is partially acceptable by virtue of the relative ease with which the listener can figure out what the *it* in the second clause might refer to. This interpretation would allow other aspects of performance to play a role in the relative acceptability of sequences raised but not explained by Lakoff and Ross. For example, (d) would be predicted as being more acceptable than (e) because of the relative clarity of *flute* in (d):

(d) ?Flutists are strange: it doesn't sound shrill to them
(e) *Flautists are strange: it doesn't sound shrill to them

Similarly, the relative productivity of the form which binds the pronominal referent should also correspond to the relative acceptability of such sentences, which is exactly the phenomenon asserted by Lakoff and Ross. Thus, sentences like (g) are more acceptable than those like (f) because "the productivity of the morphological process . . . also plays a role" (p. 122).

(f) *Iroquoianists are strange: they think it should be a world language
(g) ?Australians are strange: they don't think it's too remote

In sum, if the facts noted by Lakoff and Ross are interpreted as due to behavioral processes, then we can explain the different observations as all due to one fact, namely, *any* property of the morphologically bound form which makes it easier for the listener to isolate it facilitates the interpretation of a later pronoun as referring to it. Thus the interpretation that (b) and (c) are both ungrammatical not only simplifies the grammar, it allows for the direct representation of a significant generalization about linguistic knowledge underlying the distribution of words and morphemes.

[29] Further evidence for the perceptual as opposed to the grammatical character of the analogy we propose is supplied by the observation in note 15. Since the lexical item *unhealthy* cannot mean 'unsizable', there is absolutely no way for a grammar constructed in accordance with Standard Theory to generate sentence (a) of note (15) with the interpretation it has. In perception, however, *healthy*, in the sense 'sizable', is perspicuous in that example.

are independently verifiable mechanisms that could contribute to it, rather than leaving it open as an unconstrained grab bag to be used whenever needed.[30] By restricting analogy in this way, it is at least possible that an explanation for it can be found.

We have shown that if certain strings can be analyzed as ungrammatical but acceptable, the empirical facts about negated attributive adjective phrases can be interpreted in a way that vindicates Standard Theory. This vindication is important primarily because Standard Theory imputes more limited and specific structures to linguistic knowledge. This in turn makes more precise claims about what is in the child's mind that allows the acquisition of language. Of course, it remains to be shown that Standard Theory can be vindicated in all the areas in which it is currently under attack. However, the clarification of the relation between acceptability and grammaticality can provide the basis for a revival of what we consider to be a prematurely rejected theory.[31]

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[30] As in Chomsky (1970).

[31] For example, the contrast in acceptability between (2a) and (2b) would require a grammatical theory that allows for derivational constraints. But there is good reason to believe that (2a) and (2b) are both grammatical (see Jackendoff and Culicover (1971) and Langendoen, Kalish-Landon, and Dore (1972)). For arguments that (3a) and (3b) are both grammatical, see Grosu (1972). Grosu, in fact, attempts the very ambitious task of showing that all of Ross's constraints are based on perceptual operations. Similarly, (4a) and (4b) are interpretable as grammatical, with the unacceptability of (4a) being due to a perceptual operation that attaches an initial adverb to the nearest following verb, leading to an apparent temporal contradiction in the verb phrase (see Katz and Bever (forthcoming)).

Finally, Fauconnier (1971) and Kuno (1972) have argued that the syntactic treatment of pronominalization does not require global constraints of any kind. Thus there are two ways to remove cases that motivate derivational constraints: one can account for the facts by appealing either to an independently motivated performance theory or to independently motivated syntactic devices.