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Margaret Allen
University of Connecticut

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Allen: The Morphology of Negative Prefixes in English

The Morphology of Negative Prefixes in English

Margaret Allen

University of Connecticut

The prefixes in-, un-, and non- which appear in words such as inefficient, unhelpful, non-productive share the common label 'negative prefix'. That is, these words are all 'negative' when contrasted with their prefixless counterparts efficient, helpful, productive. Beyond this general level of observation, however, shared similarities give way to systematic differences. The purpose of this paper is to examine the differences between the negative prefixes in-, un-, and non-. Examples of phonological, morphological and semantic data will be presented in support of the argument that each prefix must be formally distinguished from the others. It will be claimed that some inherent structural property of the prefixes is responsible for their distinctiveness, and that this structural property must be characterised in terms of morphological boundaries. A variety of interactions between negative prefixes and suffix-derived words are shown to follow naturally from the proposed analysis. Finally, it is argued that the boundary distinctions proposed for negative prefixes permit an explanation of an otherwise inexplicable missing morphological form.

First, I will show that the prefix in- is distinct from both un- and non- in the context of phonological and semantic phenomena. Following the same procedure, I will then show that un- must be distinguished from non-. The examples which follow are by no means exhaustive; their function is, rather, illustrative of the kinds of distinctions which must be made at some level of analysis if a properly adequate description is to result. Further evidence that bears on the morphological status of in-, un-, and non- is examined in Allen (1978).

It is well-known that nasal assimilation occurs when in- enters into morphological combinations¹; but it does not occur in forms prefixed by un- or by non-, despite the similarity of the segmental environments.

- | | | | |
|---------------|-------------|------------|-------------|
| (1) *inlegal | illegal | unlawful | *ullawful |
| *inbalance | imbalance | unbalanced | *umbalanced |
| *inrational | irrational | unrational | *urrational |
| *?ingratitude | ingratitude | ungrateful | *ugrateful |

non-legal	* <u>no</u> l-legal
non-balancing	* <u>no</u> m-balancing
non-rational	* <u>no</u> r-rational
non-gratuitous	* <u>no</u> g-gratuitous

Some property of the prefix in-, other than its segmental composition, must be proposed in order for a rule of Nasal Assimilation to operate in forms prefixed by in-, but not in forms prefixed by un- or non-. At this point there is no reason to rule out the possibility that the necessary 'property' is simply a statement of the relevant facts; i.e. the prefix in- carries a feature [+Nasal Assimilation]. I will argue throughout this paper that such an approach is untenable.

Another example of the phonological distinctiveness of in- as compared with un- and non- is that in a number of forms prefixed by in-, primary stress falls on the prefix. This type of stress pattern is never found in words prefixed by un- or by non-.

- (2) impotent, impious, innocent (c.f. innocuous)
infinite, indolent (c.f. inolorous)

The morphological conditions under which in- is found as a prefix differ considerably from those which typify un- and non- prefixation. One example is the fact that in- is found attached to phonological sequences which are not words, as well as to sequences which are words.³

- (3) *ert inert *unert *non-ert
 *placable implacable *unplacable *non-placable
 *trepid intrepid *untrepid *non-trepid
 *sipid insipid *unsipid *non-sipid
 *maculate immaculate *unmaculate *non-maculate

In contrast, un- and non- are always prefixed to words.⁴

A second, and rather important, example of the morphological distinctiveness of in- as compared with un- and non- is illustrated by the distribution of the prefixes with suffix-derived words. The following examples are words which are clearly derived by stress-neutral word-boundary suffixes.⁵ These suffix-derived words allow only un- or non- as negative prefixes.⁶

- (4) -ish *inselfish unselfish non-selfish
 -ful *inthoughtful unthoughtful non-thoughtful

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-ing	* <u>in</u> dying	undyng	non-dying
-ed	* <u>in</u> freckled	unfreckled	non-freckled
-some	* <u>in</u> wholesome	unwholesome	non-wholesome
-ous	* <u>in</u> envious	unenvious	non-envious
-like	* <u>in</u> childlike	unchildlike	non-childlike
-worthy	* <u>in</u> seaworthy	unseaworthy	non-seaworthy
-ly	* <u>in</u> friendly	unfriendly	non-friendly
-y	* <u>in</u> lucky	unlucky	non-lucky

In- must be prohibited from attaching to derived words of this type; *inselfish, *inlucky, *inthoughtful, etc. are not possible words. Some property of the prefix in- must be established in order to correctly predict the morphological conditions of its occurrence.

I turn now to the semantics of the prefix in-. It might be argued that in- is really not a productive prefix at all, since it is commonly found attached to non-word sequences. In spite of this situation, however, it is clear that speakers have in fact analysed in- as at least a semi-productive negative prefix. If this were not true, then there would be no way to explain the coining of the word flammable as a positive counterpart of the word inflammable, 'erroneously' analysed as neg. in- + flammable'. Although in- is certainly a 'negative prefix' in this very general sense, it is typical of words prefixed by negative in- that they mean something other than, or something more definite than 'not X' or 'negative Z'. One source of this tendency is the existence of in- words in which in- does not attach to a free-standing word, as in (3). The sequence -sapid has no independent lexical meaning; therefore insipid cannot mean 'the negation of sapid'. If sapid did have a lexical meaning it should mean something like 'having a taste'; but insipid means something more definite than 'not having a taste'. In the same way, incorrigible means more than 'not correctable' and intrepid means something much more precise than 'not alarmed'. Deviation from compositionality persists even when in- is attached to a free-standing word with a fully specified lexical meaning. Compare, for example, the following forms prefixed by in- with corresponding un- or non- forms.

(5) incredible	≠	uncredible, non-credible
insubordinate	≠	unsubordinate, non-subordinate
indisposed	≠	undisposed, non-disposed
incoherent	≠	non-coherent

independent	≠	non-dependent
incompetent	≠	uncompetent, non-competent
impotent	≠	non-potent
incurious	≠	uncurious, non-curious

It can be observed at this point that the sharpest semantic contrast can be made between the in- forms, which typically deviate from compositionality, and non- forms, which are strictly compositional. The semantics of un- forms fall between these two extremes. These indications of some of the ways in which the meanings of words prefixed by in-, un-, and non- differ again underline the necessity of describing the prefixes in a way which will correctly predict their semantic behavior.

I now turn my attention to un- and non-, and will show that some formal property must differentiate un- from non-, as well as in- from un- and non-.

Phonological distinctiveness of un- words as compared with non- words is illustrated by their stress patterns.

(6) <u>Un-</u> , single primary stress	<u>Non-</u> , double stress
unwearable	non-wearable
unpolluted	non-polluted
unfixed	non-fixed
unrevolutionary	non-revolutionary

Appropriate information must be available in some form to the stress rules so that words derived in un- and in non- are not assigned identical stress patterns.

The following examples illustrate one of the ways in which non- is morphologically distinct from un-. Non- participates in an unusual derivation, illustrated in (7). Un- is not found with these forms.

(7) non-crush fabrics	*un-crush fabrics
non-drip pouring lip	*un-drip pouring lip
non-skid tires	*un-skid tires
non-stop flight	*un-stop flight
non-sift flour	*un-sift flour
non-stick surface	*un-stick surface

In my thesis (Allen (1978)) I argue that non-skid, non-crush, etc. are similar to the compound adjectives in the phrases quick-dry paint, never-fail solution, sure-start lighter fluid. These compound adjectives have the

same double stress pattern as non- adjectives, as do other compound adjectives such as all-seeing, self-sufficient, ever-present. A related piece of evidence is the fact that non- can attach to compound adjectives while un- cannot.

- | | | |
|-----|----------------------|----------------------|
| (8) | non-college-educated | *un-college-educated |
| | non-factory-built | *un-factory-built |
| | non-fuel-injected | *un-fuel-injected |
| | non-forward-looking | *un-forward-looking |

Facts such as these suggest that the type of morphological composition which non- enters into may best be characterised as compound formation, rather than simple prefixation.

As I have already indicated, even a cursory examination of the semantics of un- and non- shows that words with non- are strictly compositional, whereas words with un- deviate to some degree from compositionality. The following examples help to elucidate this point.

- | | | |
|-----|----------------|------------------|
| (9) | unmusical | non-musical |
| | ungodly | non-godly |
| | unprofessional | non-professional |
| | undyng | non-dying |

Another way to characterise the negating forces of un- and non- is to point out that un- forms contrary negatives whereas non- forms contradictories. Contrary negatives can be thought of as referring to a specific point on the negative side of a positive-negative continuum. The location of this point can be moved around, as shown by the occurrence of intensification and comparison in un- negatives; e.g.

- (10) That was a very unamerican gesture
That was more unamerican in 1960 than today

Contradictory negatives can be thought of as referring to the whole of the negative side of the positive-negative continuum. Intensification and comparison in non- negatives are thus impossible; e.g.

- (11) *That was a very non-american gesture
*That was more non-american in 1960 than today

The non-compositionality of un- negatives can be made more precise by observing that what is negated in words

with un- is typically some aspect of the meaning of the word, rather than its complete semantic specification. An evaluative or judgmental aspect is often selected for negation by un-. The words ungodly, unprofessional, unhuman, unmusical illustrate this tendency. In other cases it seems that a structural element of a word is selected for negation by un-. In (12), the force of the negative prefix un- appears to fall on the suffix, not on the stem. In contrast, the negating force of non- falls over the whole word. This difference in the scope of the negative is probably responsible for implicational differences which seem to exist.

- (12) unwearable = [not able][to be worn]
 non-wearable = [not][able to be worn]
 unreliable = [not able][to be relied on]
 non-reliable = [not][able to be relied on]

It might be argued that these semantic phenomena are due to 'scope' properties inherent to each negative prefix. Alternatively, we can propose that these semantic phenomena are due to some general structural property of the prefixes which has demonstrable consequences in other domains. This is the line of argument which I will now pursue.

I have demonstrated that it is necessary to make a three-way distinction between the negative prefixes in-, un-, and non- in each of three components of the grammar; the phonology, the morphology and the semantics. Now I must show how these distinctions are to be made. It is certainly true that the necessary lines could be drawn simply by listing information about the phonological, morphological and semantic behavior of each prefix. However, if this analysis were correct, then we would not expect to find any systematic correlations between different aspects of the behavior of each prefix. But we do find systematicity. The prefix in- which has the least compositional semantics (i.e. many semantic distortions) is also associated with the least "compositional" (i.e. most distorted) phonological patterns. The prefix non-, which has a completely compositional semantics (i.e. no distortions), also has the most 'compositional' (i.e. least distorted) phonology. The prefix un- falls between these two extremes with respect to both its semantics and its phonology. Surely this concurrence is not accidental. The correct analysis should predict exactly these facts, and no others.

Consequently, I claim that a single structural property is responsible for the multi-faceted behavior of each prefix. Morphological entities are sequences of phonological segments which are given morphological structure by bracketings, labellings, and boundaries. It is also generally accepted that phonological rules are sensitive to the presence or absence of different kinds of morphological boundaries. Boundaries seem to be good candidates for the 'structural property' of negative prefixes to which I have been referring. I therefore propose that (13) and (14) are true.

(13) The outputs of in-, un- and non- prefixation are; #[in+][X]# ; #[un#][X]# ; #[non#][#X]#

(14) The Strong Boundary Condition

In the morphological structure XB_sY , no rule

may involve X and Y so as to change any element of X or Y; where B_s is a strong boundary

(B_s is always interpretable as ##, sometimes as #)

The Strong Boundary Condition (SBC) is interpretable in both phonological and semantic terms, and in this way accounts for the simultaneity of phonological and semantic compositionality in negative prefix derived words.¹⁰ The phonological interpretation of the SBC predicts that a segment in X cannot be changed by a rule which crucially contains a segment in Y in its environment (or vice versa) if a strong boundary intervenes between X and Y. Phonological rules of assimilation are thus prevented from occurring across a strong boundary by the SBC. However, rules which depend only on the presence of a boundary are not blocked. Under the semantic interpretation of the SBC, only meaning formation processes which alter or deform some aspect of the meaning of one element of the derived word in the environment of another are blocked when a strong boundary intervenes. The presence of a strong boundary thus blocks the formation of idiosyncratic or non-compositional meanings. Straightforward semantic composition is not blocked since there is no loss or deformation of meaning involved in the compositional process. Thus the SBC correctly predicts phonological and semantic stability in the derived form non##potent, but phonological and semantic distortion in the derived form in+potent.

I have now proposed that in- is associated with an affix boundary, in+, that un- is associated with a word-boundary, un#, and that non- enters into compound-like formations with an internal double word boundary. I will now look at the occurrence of negative prefixes in suffix-derived words. I have already pointed out that in- does not occur with words that are derived by word-boundary suffixes. Some examples were given in (4). The situation is not symmetrical, however. That is, it is not the case that un- does not attach to words derived by affix boundary suffixes. To the contrary, un- may be prefixed to words derived by word-boundary suffixes and to words derived by affix boundary suffixes. This gives rise to doublets in in- and un-, as in (15).

- (15) intransitive/untransitive; inorganic/unorganic
 insanitary/unsanitary; inefficient/inefficient
 ineligible/uneligible; indecisive/undecisive

It may seem that some of these forms in un- are deviant in some way; but when words like untransitive, unorganic are compared with *inselfish, *inthoughtful, etc., it is immediately apparent that the 'deviance' of the former is due merely to some kind of lexical rivalry with an established competing in- form, whereas the latter are morphologically impossible. The in-/un- doublets must be generated by the morphology while impossible forms such as *inselfish, *inthoughtful must be blocked. All this can be achieved quite easily if we accept the proposal of D. Siegel (1974, 1977) that affix-boundary affixation rules are ordered before the cyclic phonological rules, which are ordered before word-boundary affixation rules. This ordered morphology cannot generate forms in which an affix boundary appears outside a word-boundary (e.g. *[[in+][[thought][#ful]]]). However, the ordered morphology does predict that both intransitive and untransitive, inorganic and unorganic, etc. are possible forms, since both in+ and un# can appear outside the affix boundary of the adjective forming suffix. The distribution of negative prefixes with suffix-derived words can thus be naturally explained given the proposals made here about the boundaries associated with in-, un-, and non-.

Finally, I will briefly discuss impossible words of the form un-X-less; e.g. *ungraceless, *unfearless, *unhopeless. The suffix -less is a word-boundary adjective-forming suffix. Given my preceding comments on Siegel's

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Ordering Hypothesis, it should be clear that un-X-less forms cannot be ruled out as violating ordering principles, although in-X-less forms could be. Some other explanation is needed to account for the non-existence of un-X-less forms. It has often been noticed that un- does not attach to a class of adjectives which Zimmer (1964) called 'evaluatively negative'; for example,

- (16) *unbad, *unhorrible, *unevil, *unghastly, *unugly

I shall refer to words of this type as having 'negative content'.¹¹ However, un- can attach to some derived words which have negative content in their base; e.g.

- (17) unhorrorified unmalicious unenvious
unspiteful unhated unblemished

There are other derived words to which un- cannot attach. In these cases the source of the negative content is a second negative prefix; e.g.

- (18) *undisillusioned *unmalformed *undiscontent

The clue to a solution lies in the internal morphological structure of these forms. In all cases where un- prefixation is impossible, the source of the negative content lies in the cycle which is structurally adjacent to un-. I propose that the suffix -less participates in this pattern. That is, the suffix -less has negative content and un- prefixation is ruled out because -less is uniquely contained in the cycle adjacent to un-. The parallelism of the -less cases to the other cases of impossible un- prefixation is shown in (19). The source of the negative content is underlined. In cases of impossible un- prefixation, the source of the negative content is always in the cycle structurally adjacent to un-. In cases where un- prefixation is permitted, at least one cycle separates un- from the source of the negative content.

- (19) *[un[horrible]] [un[horrify]ed]]
*[un[jealous]] [un[envious]]
*[un[discontent]] [un[discourage]ed]]
*[un[mal[nourish]ed]] [un[malign]ed]]
*[un[grace]less]

A general condition on the operation of un- prefixation can now be proposed, to the effect that un- may not attach to a word which has negative content in the cycle

structurally adjacent to un-. This condition conforms to the Adjacency Condition proposed by D. Siegel (this volume). Given the Adjacency Condition, the constraint on un- prefixation can be restated as follows; un-'s base cannot have negative content.

Footnotes

1. The assimilation facts for negative in- are identical to those for the Latinate prefix in- (into), as in indict, impose, incarcerate, irradiate, illuminate. The identity of the phonological variants of these two distinct prefixes makes it impossible to maintain that im-, il-, ir- are simply allomorphs of negative in-.
2. The fact that there are only a small number of words prefixed by in- with primary stress retracted onto the prefix is not significant. What is important is that this type of stress pattern is impossible in un- or non- derived words.
3. In a theory of word-based morphology (e.g. Aronoff, (1976)), words are derived from other words by the addition of prefixes and/or suffixes. The attachment of a prefix to a sequence which is not a word, e.g. in-ert, in-sipid, does not constitute a case of word-formation. In Aronoff's theory, words such as these are provided with an analysis (as opposed to a derivation), essentially by the backwards operation of word-formation rules. It is not my intention here to argue for any particular theoretical account of the role of non-word stems in derivational morphology.
4. There are a few exceptions to the statement that un- attaches only to words. All the exceptions are explicable, however, as words which have persisted in a prefixed form while having become obsolete or archaic in the prefixless form; e.g. uncouth, unkempt, uncanny, untoward, unruly, undaunted. Couthy and canny persist as words in many Scottish dialects. Ruly has come into use again as a technical term. Undaunted shows its word base in the existing word dauntless.
5. Stress-neutral word-boundary suffixes are suffixes which do not affect the placement of stress in words to which they are attached. It has been generally accepted that such suffixes are introduced by a word-boundary; e.g. see Chomsky and Halle (1968); Siegel (1974).

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6. Independent arguments (e.g. see Allen (1978)) exist to support the bracketing of the prefix outside the adjective-forming suffix; i.e. [un[[X]suf]_A]_A
7. The prefix in- in the word inflammable is, of course, a case of the 'other' prefix in- (into); c.f. Latin inflammare, 'to burst into flame'.
8. I am assuming here that there are only two kinds of morphological boundaries; + and #.
9. I assume that boundaries are an integral part of the specification of affixes. For a detailed discussion of affix-associated boundaries and the assignment of external word-boundaries, the reader is referred to Allen (1978).
10. Compound words provide similar evidence in support of SBC. (See Allen (1978)).
11. There seems to be no way around the fact that some types of semantic information must be available for the correct operation of un- prefixation. Zimmer (1964) provides many relevant examples.

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