Syntax within the Word: 
Economy, Allomorphy, and Argument Selection in Distributed Morphology 


KUNIO NISHIYAMA
Ibaraki University*

Keywords: Distributed Morphology, root, allomorphy, fusion, argument realization

1. Introduction

Distributed Morphology (DM) was first outlined more than 15 years ago by Halle and Marantz (1993), but we have yet to see a book devoted exclusively to the framework, whether at the introductory level or not. In this context, the book under review, written by Daniel Siddiqi (S) based on his dissertation submitted to the University of Arizona, is a welcome contribution to the field. Half introductory overview and half new material, the book presupposes no previous knowledge of the DM framework and introduces the basic concepts. It does, however, contain several new proposals that S claims will improve the framework.

The book is 138 pages long and consists of sixteen chapters divided into four parts, but many of the chapters, two of which are interim conclusions, have less than ten pages. Moreover, there are also many page-length diagrams, making the book look quite concise.

Part 1 introduces conventional DM, and I think it contains a fair overview of the framework. One of the features of conventional DM that is important in the following parts is that the framework treats roots and functional categories differently. In part 2, S claims that such a dichotomy is undesirable and proposes that roots and functional categories be given a uniform treatment, which is the most important feature of the book. In part 3, S extends the proposed revised version of DM to argument realization. In

* I thank EL reviewers for comments and suggestions, and Ronald Craig for proofreading.
Part 4 he discusses event structures and typological issues.

This review is organized as follows. In section 2 I introduce some basics of conventional DM and show how it treats roots and functional categories. In sections 3 and 4, I focus on S’s claim in his part 2, discussing the importance of S’s viewpoint and the consequences of his proposal. Section 5 is concerned with his part 3 on argument realization. Section 6 notes miscellaneous points, and section 7 is a conclusion. I will not discuss his part 4, for, as the title says, it contains “odds and ends.”

My overall evaluation of the book is that, while S’s point of view is important, his specific proposals have several undesirable consequences, leading me to conclude that further refinements will be necessary to make the proposed version of DM an improvement over the conventional one.

2. Conventional DM

Functional categories and lexical categories are two important ingredients of the linguistic theory of the late 80s and later. It has long been assumed that functional categories and lexical categories share fundamentally the same syntactic property, but some recent works claim that this is not always the case. Thus, Baker (2003) claims that some lexical categories do not conform to X-bar theory, and Cinque (1999, 2006) claims that functional categories are much more articulated than lexical categories. In short, it is controversial whether functional categories and lexical categories are to be treated uniformly or not.

In the domain of morphology, conventional DM takes the position that functional categories and lexical categories are treated differently. In this framework, only functional categories compete for vocabulary insertion. Thus, the present markers in English are regulated as follows:

\[(1) \begin{align*}
&a. \quad [3, \text{SINGULAR, PRESENT}] \rightarrow -s \\
&b. \quad [\text{PRESENT}] \rightarrow \emptyset
\end{align*}\]

(1a) applies in he speaks, and (1b) in I speak. The point here is that there is competition between the two present markers. When there is a subset relation between the two potential candidates for a feature complex, the more fully specified one wins, due to the “elsewhere principle.” In (1), since (a) is more specific than (b), the former wins in the context of the third person singular.

In contrast to functional categories, there is no competition among lexical categories in conventional DM. Thus, there is no situation where e.g., cat and dog compete against each other for insertion. This point seems trivial,
but the same situation holds for irregular plurals. Halle and Marantz (1993) argue at length why an “affixless” theory of morphology like Anderson (1992) is undesirable, motivating their own view that morphology is “pieces of inflection,” as the title of their paper says. Accordingly, they postulate extensive zero morphemes. For example, mice contains a zero allomorph of plural marker, shown as mice-Ø. The correct form is obtained by the operation “readjustment” as follows:

\[
\text{mouse} \rightarrow \text{mice} / \text{[PLURAL]}
\]

Here, the vowel in mouse changes in the context of [PLURAL].

Thus, allomorphs of functional categories involve competition, as in (1), but allomorphs of lexical categories do not, as in (2). S claims that this bipartition is problematic and leaves room for improvement, which I discuss in the next section.

3. Root Competition

S’s fundamental standpoint is that the dichotomy between functional categories and lexical categories in conventional DM is undesirable and that a unified treatment of roots and functional affixes is called for. Concretely, S claims that the vocabularies for the roots also compete, basically following Pfau (2000, 2009). Thus, cat and dog “compete against each other for insertion, deciding the winner based on which better matches the contents of the target node” (p. 32).

In essence, S analyzes irregular inflectional forms as involving fusion of the root and the relevant inflectional features. This is due to the following principle (p. 4):

\[
\text{(3) MINIMIZE EXPOENCE}
\]

The most economical derivation will be the one that maximally realizes all the formal features of the derivation with the fewest morphemes.

Since this principle prefers fusion of morphemes to concatenation, it is a radical departure from the original concept of DM. As we saw in section 2, the plural form mice contains a zero allomorph of the plural marker, as mice-Ø, in addition to readjustment, repeated below:

\[
\text{mouse} \rightarrow \text{mice} / \text{[PLURAL]}
\]

Thus, in conventional DM, mice is a concatenated form, not one derived by the fusion of mouse and [PLURAL].

S argues that both zero morphemes and readjustment are undesirable and thus should be dispensed with. His proposed analysis is that, rather than
a contextual feature as in (2), the plural feature is a substantive feature in mice (p. 37):

(4) \[ \sqrt{\text{MOUSE}}, [n], [\text{PLURAL}] \] → mice

\sqrt{\text{MOUSE}} is a category-neutral root in the sense of Marantz (1997), and is categorized with a functional head as [n]. (4) is different from (2) in that the plural feature is part of the information that mice contains. In (2), in contrast, the plural feature provides the context for readjustment, and the feature itself is realized as zero.

Several questions arise regarding S’s analysis. The first is what to do with sleep ~ slept. As S notes (p. 31), this is a case where the root is irregular but the affix is regular ([t]) in the conventional DM analysis. Thus, the segmentation would be sleept, where the vowel change is a case of readjustment. Although S does not give his own analysis of this case, by extension from (4) he would analyze slept as one morpheme containing the past feature (\([\sqrt{\text{SLEEP}}, [v], [\text{PAST}]])

A related question is the nature of vowel alternation. The pattern of sleep ~ slept is common in English, as in keep ~ kept and weep ~ wept. Without readjustment rules, the parallel pattern of vowel alternation in such examples would be a coincidence. S (p. 43, n. 3) recognizes this potential problem, but claims that such vowel alternations are historical artifacts and not part of synchronic grammar. It remains to be seen, however, whether this claim is justifiable.

As evidence for his position, S (ch. 7) gives an analysis of inflection in compounds. As is well known, the first element in English compounds cannot inflect with regular affixes, but can inflect with irregular forms, as *raths-infested vs. lice-infested. According to S, the conventional DM analysis would have difficulty in this case, for the structures are identical whether the inflected form is regular (rat-s) or irregular (lice-Ø). S (p. 59) gives an alternative analysis where “nominal compounds are the joining of the feature [n] to a root.” Thus, since the ungrammatical case is segmented as *rat-s-infested, and the plural affix -s does not contain [n], the compounding is impossible. In contrast, in grammatical lice-infested, the left element lice contains the [n] feature (cf. (4)), and the compounding is possible. (Recall that S does not assume a zero morpheme for lice.)

To the extent that the above analysis is successful, it makes a strong case for the claim that zero morphemes and adjustment are better dispensed with. A question remains, however, what to do with oxen-lover and children-lover, which are better than *cows-lover and *kids-lover, according to
my consultants. This is a case where the conventional DM analysis would postulate overt, not zero, allomorphs for the plural as *child-ren and ox-en. The structure would then be the same as *rats-infested and we would incorrectly predict that oxen-lover is ungrammatical. In contrast, S would say that history is not part of synchronic grammar and would be most likely to analyze both oxen and children as single morphemes containing the plural feature, which would allow him to treat oxen-lover on a par with lice-infested, as desired. However, if there is ever synchronic evidence that -en and -ren are allomorphs of the plural marking, S’s analysis will turn out to be similar to the conventional DM analysis and thus fail to capture the difference between oxen-lover and *cows-lover.

4. The Nature of Fusion

As we saw in section 2, in the conventional DM analysis, the present markers in English are regulated as follows (repeated):

(1) a. [3, SINGULAR, PRESENT] → -s
   b. [PRESENT] → Ø

(1a) applies in he speaks, and (1b) in I speak. The point in (1a) is that the fusion of features in person, number and tense is obligatory. This raises the question as to why fusion is obligatory, and S’s answer is that it is because of the principle of MINIMIZE EXPONENCE (3), which predicts fusion in all cases. However, rather than discussing suffixes as in (1), S focuses on roots. Specifically, he discusses why we have he speaks but he spoke. This section reviews issues surrounding this discussion.

Following the guideline to eliminate zero morphemes and readjustment, S (p. 51) proposes that spoke is obtained by fusion of the root and the past feature:

(5) [√Speak, [v], [PAST]] → spoke

For speaks, given that the present feature resides in the suffix, -s, fusion cannot be happening in the root speak. The obvious question then is why fusion does not apply here. In fact, S is not explicit about whether fusion is in principle optional or obligatory; he says fusion is “ubiquitous” (p. 51). This begs the question of why fusion of the tense feature and the

1 One does not have to say that fusion cannot happen in I speak; even if fusion occurs and we get [1, SINGULAR, PRESENT], this feature complex does not match (1a), and we apply the default (elsewhere) rule in (1b).
root applies in *spoke*, but not in *speaks*.

This question leads S to coin a new mechanism of “¬ (negative) specification.” Concretely, *speak* has the following lexical entry:

(6) $\sqrt{\text{Speak}}, [v], \neg [3\text{SG}] \rightarrow \text{speak}$

What (6) says is that *speak* is not compatible with a feature complex containing the third person singular. (For ease of presentation, S omits the [PRESENT] feature.) Therefore, when the subject is *he* and fusion applies, the feature complex $[\sqrt{\text{Speak}}, [v], [3\text{SG}]]$ would be incompatible with the featural specification of (6). In this situation, no vocabulary insertion is possible and the derivation will crash. This reasoning in effect blocks fusion. (Implicit here seems to be the claim that one does not have to stipulate that fusion is blocked in this case. S (p. 124, l. 2) uses the word *effectively* to describe this phenomenon.)

This analysis has several undesirable consequences, however. First of all, the negative specification is quite redundant. We need the lexical entry for suffixes as in (1) anyway. This means that features specified in the suffix need to be redundantly specified negatively in the root as well. In the case of *speaks*, since *-s* is specified as [3, SINGULAR, PRESENT], the root is also specified as $\neg$ [3, SINGULAR, PRESENT].

The problem becomes particularly serious for languages with rich agreement. As an illustration, imagine a hypothetical language where there are six present suffixes for *speak*, as *speak-a* [1SG], *speak-b* [2SG], *speak-c* [3SG], *speak-d* [1PL], *speak-e* [2PL], *speak-f* [3PL]. Since fusion must not apply in each case, the lexical specification for *speak* in this language would have to contain negative specification for all the feature combinations, as $[\sqrt{\text{Speak}}, [v], \neg [1\text{SG}], \neg [2\text{SG}], \neg [3\text{SG}], \neg [1\text{PL}], \neg [2\text{PL}], \neg [3\text{PL}]]$. This is already very odd, but things could be infinitely complicated. According to Baker (1996: 190), Mohawk (Iroquoian) has a formidable 441 patterns of combination in agreement features. The proposed approach would have to posit the same number of negative specifications for all default forms in such languages. This conjecture makes the proposed negative specification $\neg$ highly suspicious.

There is one more technical complication in the analysis. One tacit but

---

2 This question does not arise in the conventional DM analysis in (1). Since *spoke* is supposed to have a zero allomorph of the past marker as *spoke-Ø*, there is no situation where the tense feature is fused with the root.

3 This is because, in addition to familiar agreement features, the language has features for inclusive, exclusive, neuter, zoic, dual, and they appear as a subject-object portmanteau.
crucial assumption in S’s analysis is that the third person feature and the singular feature are put together as [3sg]. This is necessary, since the following lexical entry cannot be correct.

(7)  $[\sqrt{\text{Speak}}, \neg [v], \neg [3], \neg [\text{Singular}]] \rightarrow \text{speak}$

(7) wrongly predicts that we cannot insert speak in I speak and they speak. The former is blocked because of the $\neg [\text{Singular}]$ feature in (7), and the latter is blocked because of the $\neg [3]$ feature. Thus, unlike in (7), we must have the $\neg [3\text{sg}]$ feature as in (6). $\neg [3\text{sg}]$ has the effect that speak is blocked only when the third person feature and the singular feature are put together. But since $[3\text{sg}]$ is already a fused form, we have fusion within fusion. Since the conventional DM analysis does not have to resort to this complicated structure, this is the price we have to pay if we want to eliminate readjustment.

In addition to the above technical problem, the proposed negative specification implies another radical departure from the original concept in DM. One key feature of DM is underspecification. For example, the verb in I speak might contain $[1\text{sg}]$, but such a feature is irrelevant for insertion of speak. The vocabulary specification of speak is just $\sqrt{\text{Speak}}$ and nothing more. That is, it contains no feature specification (thus underspecification). In contrast, S’s approach predicts that the default form is fully specified. S is well aware of this implication, stating that “while [the default forms] have a small amount of traditional specifications, they have a large amount of $\neg$ specifications” (p. 125).

5. Argument Realization

In part 3, S extends the proposed revised framework of DM to the domain of argument realization. Again the key features are fusion and negative specification. For example, arrive has the following lexical entry:

(8)  $[\sqrt{\text{Arrive}}, \neg [v], [\text{Trans}]] \rightarrow \text{arrive}$

S adopts a clause structure where arguments (whether external or internal) are introduced by functional heads. The head v introduces the external argument (cf. Chomsky (1995)). TRANS, adopted from Jelinek (1998), introduces the internal argument.4 (8) says that arrive is inserted into

---

4 This terminology is a bit of a misnomer and potentially confusing. This is because, in some approaches, the distinction between transitives and intransitives is not whether a verb has an object or not. Given the widely-accepted unaccusative hypothesis and Hale
the complex head containing the functional head for the internal argument ([TRANS]), but it is crucially incompatible with the functional head for the external argument (¬ [v]). This accounts for *The captain arrived the ship. (As in the conventional analysis, the subject in The ship arrived is originally an internal argument.)

In chapters 11 and 12, S extends the above analysis to subcategorization and nominalization involving zero-derivation. To account for *I pondered whether the world would change and *I wondered the fate of the world, S (p. 107) postulates the ¬ [S] feature for ponder and the ¬ [TRANS] feature for wonder. (S argues at length that the internal nominal arguments (introduced by TRANS) and the sentential arguments (introduced by S) are different.) For the nominalized form in John built a run for the dog (p. 92), S argues that all we need for run is [√RUN, ¬ [3SG]], and that this covers both verbal usage (with various subcategorization frames) and the nominal usage as in the cited example. Here, S faithfully exercises the underspecification spirit of DM.

Argument realization is a domain which conventional DM is relatively silent about. In this sense, S’s extension of his version of DM to argument realization is an interesting attempt. Its success depends, however, on the success of the convention of negative specifications, which, unfortunately, has undesirable consequences, as we saw in the previous section. Another potential inconsistency has to do with underspecification. As we saw above, S utilizes underspecification in the analysis of run. However, we saw at the end of the previous section that S takes almost the opposite stance to the more general conventional view of underspecification.

6. Miscellaneous Points

This section lists four small points that I think are worth mentioning. The first has to do with S’s usage of the term ‘head movement’ and ‘morphological merger.’ As is well known, although they often have the same effect, the former is a syntactic operation and the latter a morphological/PF operation. Thus, head movement obeys the head movement con-

and Keyser’s (1993) analysis where unergatives contain cognate objects, every verb has an internal argument. Thus, the true difference concerns whether the verb has the external argument or not, and this is what transitivity is all about. Indeed, Collins (1997) utilizes the label Tr for v. A better term for the projection introducing the internal argument would be AspP (cf. Borer (2005) and Takano (2003)).
straint (or the ECP, cf. Baker (1988)) and merger obeys the adjacency condition (cf. Bobaljik (1995)). S (pp. 24, 34, 76) adopts Bobaljik’s analysis utilizing merger under adjacency for the affixation of the tense feature only, and adopts head movement for concatenation of other features, including the root and the verbalizing [v] feature.

However, S also utilizes the term “merger” to refer to affixation or morpheme concatenation in general, and thus makes no distinction between head movement and merger. This is attested in S’s wording “‘head movement’ (i.e. morphological merger)” (p. 34) and “head movement (an instantiation of morphological merger)” (p. 76). This reflects S’s second definition of merger as “the process whereby two independent zero-level nodes are reorganized into one complex zero-level node be it by affixation to each other, re-linearization, or conjoining” (p. 24). I find this dual sense of terminology quite confusing. As far as I can see, for the purposes of the data discussed in the book, the same effect can be obtained even if we do not assume head movement and analyze affixation in general as merger.

Second, S (p. 17) states that when two morphemes end up in a tie in traditional DM, “the competition is simply (but crucially) extrinsically ordered.” But this is not entirely correct. Halle and Marantz (1993: 124) explicitly state that “consideration of substantive features realized by a Vocabulary entry takes precedence over contextual consideration.”

Third, S (p. 83) lists Baker (1988) as a “Lexicalist model.” But this is obviously a mistake, for the author (as well as the work) is universally recognized as one of the most prominent proponents of the syntactic approach to word formation, as opposed to the lexical approach.

Finally I list typos that I found. how → Ø (p. 6, l. 9); head movement can be argued to [be] the merger (p. 24, l. 8); the functional those heads → the (or those) functional heads (p. 75, l. 5); english → English (p. 84, l. 9); will produced → will produce (p. 93, l. 2); than → then (p. 102, l. 17); has raised to some object positions in the superordinate clause not at all → has not raised to some object positions in the superordinate clause at all (p. 103, l. 6); not can they → nor can they (p. 106, l. 18), to → To (p. 106, l. 24). In the references (p. 134), Jelinek’s article should be 1998 rather than 1988, and in Yaqui should be in the title of the paper, not of the book (see the reference in this paper).

7. Conclusion

As we saw at the beginning of section 2, it is controversial whether func-
tional categories and lexical categories are treated uniformly. S’s characterization of traditional DM as “containing two grammars” (p. 41) for roots and affixes is correct, and whether this bipartition is valid is an important question. In this sense, S’s alternative is an interesting implementation of the uniform treatment of functional categories and lexical categories in the domain of morphology.

In contrast to ever-changing Chomskian theories, DM has remained largely static since its birth. In this respect, S’s work is important as a possible breakthrough. To recapitulate my review, S might have simplified DM by eliminating massive zero morphemes, readjustment, and the distinction between the root and the affix in vocabulary insertion competition. However, as trade-offs, we cannot analyze slept as bi-morphemic, and the parallelism between sleep ~ slept and keep ~ kept becomes a coincidence. Moreover, we have to allow massive redundancy of positive and negative specification of features in the root and the affix, and a counter-intuitive implication that the default form is the most fully specified with respect to negative specification. Therefore, I have to conclude that S’s enterprise to “improve” DM has not been achieved to the level that he had first intended.

Despite the above weakness, one valuable aspect of the book is that it illuminates basic issues surrounding the relation between morphology and syntax. The distinction between functional categories and lexical categories is largely discussed in the domain of syntax, but this book is a rare example that discusses the issue in morphological terms. S’s viewpoint is important in this respect, and his insights, whether ultimately successful or not, may give clues to the question of whether having different grammars for roots and affixes is a logical consequence of the UG clause architecture or merely a theoretical artifact that is better dispensed with.

REFERENCES

Doctoral dissertation, MIT.

[received December 19 2009, revised and accepted May 6 2010]

College of Humanities
Ibaraki University
2–1–1 Bunkyo, Mito
Ibaraki 310–8512
e-mail: kn20@mx.ibaraki.ac.jp