Autosegmental and metrical phonology By John A. Goldsmith (review)

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REVIEWS

Autosegmental and metrical phonology. By JOHN A. GOLDSMITH. Oxford: Basil
  Blackwell, 1990. Pp. 376. Cloth $60.00, paper $19.95.

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Goldsmith's book *Autosegmental and metrical phonology* (*AMP*) has two
major purposes. First of all, it is an introduction to autosegmental, metrical,
and lexical phonology, 'designed to present the basic ideas of these geometrical
models of phonological representation' (1). And second, it is an attempt to
'bring together the central ideas of autosegmental, metrical, and lexical pho-
nology to form a synthesis that is very much needed today' (1). As part of this
task, it introduces a number of original contributions to phonological theory.
The book is thus both a textbook and more: it is a text in that it provides a
basic introduction to current theories of nonlinear phonology and the organi-
zation of phonology; it is more than a text in that it introduces significant
original contributions to these theories.

Given its two distinct goals, this book is really worthy of two separate re-
views. I would like to focus in this review on just one of the book's purposes:
I will examine its success as a textbook. The review might have been very
different if I were considering the book primarily as a contribution to linguistic
theory rather than as a textbook.

1. I will begin with a brief overview of the contents. *AMP* is divided into
an introduction and six chapters. Ch. 1 ('Autosegmental representations', 8–
47) introduces autosegmental representations through an examination of tonal
systems. The association conventions and a number of sources of evidence for
autosegmental tones, including tonal stability, floating tones, and contour
tones, are discussed in this chapter. One of the few types of evidence for
autosegmental tones that is missing is the existence of tonal morphemes, as
argued for in Igbo, for instance, in Goldsmith 1976. Ch. 2 ('The skeletal tier',
48–102) deals specifically with problems of multiple association, geminates,
and template morphology. Ch. 3 ('Syllable structure', 103–68) includes sections
on the structure of the syllable, syllable structure assignment, syllable-based
rules, and—one of the major original contributions of the book—autosegmental
licensing. Ch. 4 ('Metrical structure', 169–216) introduces metrical phonology,
including both arboreal and grid-based accounts, and discusses extrametrical-
ity. Ch. 5 ('Lexical phonology', 217–74) addresses several major topics: struc-
ture preservation, the Elsewhere Condition, lexical levels, underspecification,
and the cycle. An original account of English word stress based on juncture
rather than level ordering closes the chapter. The final chapter ('Further issues',
275–332) deals with four main topics: feature organization, vowel systems, the
Obligatory Contour Principle and the Morphemic Tier Hypothesis, and, finally,
harmonic rule application, another major original contribution.

2. Goldsmith 1989 defined several goals for a textbook, and it is interesting to measure his book against these goals. Perhaps most importantly, he states that 'the text must attempt to pull out from the complex web—or morass—of current proposals that logical structure which best represents the theory as it is currently understood... What the author of a text must do is recreate the theory afresh, reestablishing the points of contact between fact and theory' (158).[1] While one could quibble with these goals, I will accept them as appropriate and see how *AMP* measures up against them.

How well does G succeed at representing the logical structure of current phonological theory? As far as the basic ideas of autosegmental phonology, metrical phonology, and lexical phonology are concerned, I think that he is largely successful. He introduces many of the topics that have been major themes in the literature for the past fifteen years, as can be seen by the above outline of the main areas that he covers. There are areas that do not receive attention, e.g. moraic phonology (see, for example, Hyman 1985, McCarthy & Prince 1986, and Hayes 1989; the term 'mora' is introduced on p. 53 but does not appear elsewhere in the book); prosodic morphology (see McCarthy & Prince 1986, 1990); and rules (while the book takes a representationally-based approach, it is in fact rather difficult to examine representations without a well-defined typology of rules; see, for instance, Archangeli & Pulleyblank 1986 for discussion). Many aspects of phonological theory, however, are examined with care. In terms of overall theoretical underpinnings, the coverage is broad and thorough.

The particular topics that I found to be most effectively presented include the major arguments for autosegmental tones and the skeletal tier, the overview of lexical phonology, the treatment of underspecification, and details of metrical phonology. Throughout *AMP* G gives many detailed examples, and he discusses advantages and disadvantages, both theoretical and empirical, of different approaches within the theoretical framework.

While in many ways *AMP* provides a good overview of phonology, I nevertheless have some misgivings about using it as a text. These misgivings arise in large part because of the manner in which parts of the book are written. I will give three examples.

Consider, first, the discussion of affricates. A proposal made by Sagey 1986, following, for instance, Campbell 1974 and adopted by McCarthy 1988, is that affricates are contour segments, with ordered features [− continuant]–[+ continuant]. Goldsmith rejects this analysis on two grounds. He argues first that 'affricates are often found in languages without fricatives' (69), and he suggests that contour segments are therefore not parallel to contour tones, where the tones are decomposable into level tones that exist independently in the language. His second type of evidence comes from phonological rules: he suggests that affricates do not show so-called 'edge effects'. The example that he gives, Wichita, is not clearly enough presented to support this conclusion. Rood's 1975 conclusion that Wichita [c], a dental/alveolar affricate, must be both

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[1] In addition, he suggests that a textbook must not be 'a platform for preachiness' (158).

[+continuant] and [+interrupted] is stated without argument; G simply points out that 'Rood's discussion leaves no room for viewing the affricate *c* in Wichita as a complex structure of the sort sketched in (45)' (69). (Ex. 45 is a structure with both /t/ and /s/ associated to a single consonantal slot.) G rejects without discussion Sagey's 1986 evidence for affricates having a [−continuant] portion on the right-hand side: 'the evidence there is far less than is needed to establish the case in general' (69). This evidence deserves discussion; it is important for students to learn why evidence is insufficient. G instead opts for an analysis in which affricates are distinguished from stops by a release feature such as [delayed release], but he in fact presents no positive evidence for this analysis. The structure of affricates continues to be a much-debated topic (see e.g. Lombardi 1990 and Steriade 1989 for some recent work), and G basically dismisses the issue as closed.

A slightly different case in which the structure of the theory is presented in a misleading way arises in the discussion of syllabification. G proposes that syllables need not be onset first, but can essentially be the reverse of the usual syllable, with a syllable-final rather than a syllable-initial onset. The evidence he cites comes from just one language, Scots Gaelic; the data given is sparse, and the work on which it is based is an unpublished manuscript. This proposal has not received attention in the literature; perhaps it should have, as it is a logical possibility, but my point is that G's discussion suggests that it has formed part of the theory.

In another instance, G makes the well-established point that C and V slots can be empty, e.g. in cases of deletion leading to compensatory lengthening and in cases such as h-aspiré in French (57–58). He suggests that, while empty skeletal slots are possible, no cases exist in which a stem has 'an element on the phonemic tier to which there are no corresponding skeletal positions at the deepest level' (64). While the theory predicts that such cases should exist, G asserts that they do not, and offers a skeletal-phonemic tier splitting account that might describe (but, as he points out, would not account for) such a fact. By this account, underlying representations would contain linear, i.e. nonautosegmental, strings of consonants and vowels. A rule would separate out the feature [syllabic] from the other features, creating C- and V-positions on the skeleton. Rather than accepting the claim that phonemes must have skeletal slots, G could have presented an argument from French that phonemes without skeletal slots exist. A variety of autosegmental analyses have been given for French (e.g. Booij 1984, Clements & Keyser 1983, Encrevé 1983, 1988, Hyman 1985, Prunet 1986); one possibility (represented by Hyman 1985 and Prunet 1986) is the following: the masculine form in pairs such as *petit-petite* 'small.masculine-small.feminine' ends in a /t/ without a skeletal point, as in 1.

(1) x x x x
     | | | |
     p ə t i t

The /t/ cannot be syllabified unless a vowel-initial form follows, yielding forms such as those in 2.

(2) [pti] garçon   petit garçon   'little boy'
    [ptit] ami   petit ami   'little friend'

The feminine morpheme takes as its underlying representation simply a skeletal point, licensing the final consonant—/t/ in the example in 1. While this is not the only possible analysis of French, it could be used to argue that a possibility predicted by the theory, a phonemic melody with a skeletal slot, might actually be found.

These particular discussions, then, do not strike me as representative of work in phonology. They seem unbalanced in several ways: in rejecting analyses that continue to be topics of debate (e.g. the structure of affricates), in presenting analyses that have not received an airing in the literature (e.g. onset position), and in ignoring analyses that have been presented in the literature and at the same time developing analyses that, as G points out, are themselves problematic (e.g. the analysis that phonemes cannot exist without skeletal points).

The chapter on metrics presents yet a different type of problem. The introduction to this chapter more or less assumes that the reader has knowledge of the goal of metrical theory. The chapter begins with a discussion of formalism, and it is not until three pages into the chapter that the reader is given an indication of why some sort of metrical system is needed. The reasons are then clearly given, but immediate clarification of the types of problems that lead to the need for metrics would give a student a reason to continue reading.

Nevertheless, this chapter is quite useful. It begins with a discussion of metrical trees, introducing the basic foot parameters and the issues of stress clash and word trees. The second major section is concerned with metrical grids, based largely on Prince 1983; it contains a comparison of arboreal and grid theory, followed by a careful examination of the basic parameters of grid construction. The introduction to both theories of metrics and the comparison of the theories make this chapter particularly valuable.

I will now turn to a brief discussion of the examples found in *AMP*. The richness of material from Bantu and Mexican languages is welcome, and among G's examples are analyses familiar from the theoretical literature—e.g. templatic morphology in Arabic, structure preservation in Catalan, syllabification in Spanish, compensatory lengthening in Luganda, tone association in Kikuyu, and empty consonant positions in Seri—as well as less familiar analyses, e.g. tone in KiHunde, tone in San Miguel El Grande Mixtecan, templatic morphology in Sierra Miwok, syllabification in Selayarese, stress in MalakMalak, liquids in Kuman, and vowels in Witoto.

Two aspects of G's data presentation require comment. For many of the languages discussed, sufficient data is presented to evaluate his claims. However, this is not always the case. The representation of affricates in Wichita was mentioned above; the discussion of stress is Southeastern Tepehuan is also somewhat cryptic. Second, and more seriously, I noticed a tendency to introduce a concept with a complex example where it might be better to begin with a simpler one. For instance, G's argument for his Conjunctivity Condition

(Hayes' Linking Constraint) is based on some relatively complex tonal phenomena in KiHunde. He also uses Tigrinya to motivate this condition, at a later point. The Tigrinya example strikes me as a simpler one, since the rules involved are far more straightforward and easier to motivate, and it is thus a better example to use in introducing the constraint. The very first example in the book, from Kikuyu, is very clearly presented, but it nevertheless involves the association of the first tone to the second rather than the first vowel. G argues that the Initial Association Rule typically (but not universally) associates the first tone to the first vowel. If this is the typical situation, it would be useful to begin with an example that shows the paradigm case rather than one that is unusual in some way. Similarly, in the chapter on metrics the first example, from MalakMalak, requires resolution of stress clash, and thus machinery beyond the most basic parameters of left edge/right edge, left headed/right headed, bounded/unbounded, and quantity insensitive/quantity sensitive. I find that students unacquainted with metrical theory need practice simply manipulating the formalism in languages without extra mechanisms before they move to anything at all exotic, and a simpler example with a very straightforward alternating stress pattern would be easier to understand. In discussion of the Peripherality Condition, Spanish is used as an example. Spanish actually looks like a counterexample to this condition, because peripherality is defined with respect to the stem rather than the word in this language, as G points out. Again, an example where peripherality is defined with respect to the word would be useful as an introduction to this section; the Spanish example could then be used to show that 'peripheral' is actually a relative term and can be defined with respect to different levels.

The most noticeable gap that I find in *AMP* has to do with the treatment of rules. In the final section of the book G discusses the role of well-formedness conditions at different levels of the grammar in motivating the application of phonological rules. However, he does not address the issue of what rules can do, a topic considered by, for instance, Archangeli & Pulleyblank 1986. Although recent work in phonology has focussed on representations rather than on rules (see e.g. McCarthy's 1988 statement: '... if the representations are right, then the rules will follow' [p. 84]), a well-defined rule typology is essential to complement a restricted theory of representations. A section on this topic would be useful to students, who can often learn how to manipulate representations but then offer processes that do not seem to be motivated; if they were given a set of possible rule types, it might become easier for them to actually do independent phonological analysis. The lack of a rule typology cannot really be seen as a criticism of *AMP* in particular, since the treatment of rules in the book is a consequence of the treatment of rules in phonological theory as a whole; still, a section on types of possible rules would have been welcome.

3. I will now turn briefly to one major topic that I have so far not addressed, the development of new theoretical positions within the context of a textbook. Four major areas are discussed: autosegmental licensing (the relationship between segmental and prosodic structure), a juncture- rather than a level-based

view of English stress, vowel features, and harmonic phonology. In most cases, it is made clear that these areas reflect G's own work. However, vowel features are presented in the text as if there were general agreement on these features and the consequences of adopting them. For instance, G says that the vowel features discussed in this section vitiate Steriade's 1987 arguments concerning the underlying specification of features (348); but the theory proposed by Steriade continues to be much cited in the literature, and the vowel features used by Steriade are still in use. The representation of vowels is perhaps one of the most hotly debated areas of segmental phonology (see e.g. Schane 1984, van der Hulst & Smith 1985, van der Hulst 1989, Kaye et al. 1985, and Clements 1990, some of which are mentioned in a footnote); I found that this section does not give the flavor of the controversy surrounding vowel representations, even within a framework that is sympathetic, though not identical, to that proposed by G. (In other cases, e.g. metrics, the status of the feature [syllabic], feature organization, and degree of underspecification, the sense of controversy is highlighted.)

Regardless of whether a particular topic is identified as a new theoretical contribution or not, I believe that a textbook is not the appropriate place for theoretical innovations; it is a place for synthesis rather than detailed original analysis. Theoretical innovations must be debated in the literature before they are enshrined in a textbook. Otherwise, despite cautions that certain sections represent original work, students are likely to take these contributions on a par with the claims that are well-established in the literature and taken as givens by most phonologists.[2] In introducing the original theoretical contributions in a textbook, G is following perhaps too literally his criterion that one of a textbook-writer's jobs is to 'recreate the theory afresh'; he is actually creating the theory afresh rather than recreating it.

4. I will make a few final comments on details before closing. The association conventions (14) allow for one-to-one association of autosegments to hosts; Pulleyblank (1986:11) deserves credit for this particular formulation. The Linking Constraint, developed in Hayes 1986, is slightly revised and presented as the Conjunctivity Condition, although no rationale for this change in name is presented. (In a later section [80] the Linking Constraint is referred to as the 'Linkage Condition', and the name is rejected since G uses the term 'Linkage Condition' for what is often called prosodic licensing—a principle that guarantees that units that are not integrated into higher levels of structure are not pronounced. Elsewhere in the book, the term Linking Condition is properly used for Hayes' proposal.) G often cites unpublished manuscripts, especially in the sections involving original proposals. I think this should be avoided in a textbook.

G sometimes uses lexical items that are perhaps inappropriate for a textbook.

[2] I am ignoring the fact that G explicitly states that his book is more than just a textbook—that it is also a forum for original contribution. I am trying to evaluate it strictly as a textbook, and am not evaluating the original material on its own merit. I feel that combining the overview and synthetic functions of a textbook with original theoretical work just is not successful.

For example, he talks about a 'proper phonological account of point-of-artic-ulation for nasals' (329), intermediate representations that are 'correct' (17), and a theory being 'only a very rough approximation of the truth' (6, in a discussion of lexical phonology). The use of terms such as 'proper', 'correct', and 'truth' in such contexts might tend to close off inquiry and debate.

5. Overall, then, while there is richness in *AMP* and much to recommend it as a textbook, the view of phonology presented here is often unbalanced and, in many ways, personal. G has a tendency to represent not what phonology has been, but rather what he thinks phonology should have been: he follows his own route, whether it is that taken by others or not. While this is appropriate in meeting the second goal that he sets, the book that I have chosen not to review, it does not seem to be appropriate for the first goal, a textbook. I have used *AMP* in a phonology class that fits the description of one of the groups for whom the book is meant, and I will probably continue to use it in this class, but I use it with caution. In the areas in which G is basically summarizing, synthesizing, and recreating the theory I find the book very strong; in the areas about which he has strong opinions himself and in the areas in which he creates the theory, I find that the book is lacking in perspective.

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An introduction to phonetics and phonology. By JOHN CLARK and COLIN YALLOP. Oxford & Cambridge, MA: Basil Blackwell, 1990. Pp. xiv, 400. $24.95.

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As the perspectives and goals of phonetics and phonology move closer together, the need for an introductory textbook integrating these two allied subfields of linguistics increases. *An introduction to phonetics and phonology* (*IPP*) is the first attempt that I know of to do this and, in this respect, is an important contribution to the field. While it may have limitations as a textbook (see below), *IPP* is generally informative, interesting, and well-written.

In order to break down what they see as artificial divisions, C&Y have intentionally 'blurred' the boundaries of phonetics and phonology in their presentation. Philosophical issues with respect to the two subfields are discussed throughout the book and an attempt is made to develop our understanding of these within a broader perspective of philosophy of science. The authors' conscious attention to intellectual goals and biases and the role of these in shaping research and results is unusual and refreshing. Yet in spite of this integration, the views of phonetics and phonology espoused are fairly traditional, and there is little discussion of recent work focusing directly on the phonetics-phonology interface (see e.g. Keating 1988).

The authors argue for what they call a 'functional view of language in which system and structure are foundational' (329). This perspective serves as a unifying element in their discussion of both phonetics and phonology. Although C&Y seem to feel that this view is antithetical to many current views of phonology,