

## REVIEWS

Alan Bell and Joan B. Hooper (eds.), *Syllables and Segments*. North-Holland Linguistic Series 40. Papers from the Symposium on Segment Organization and the Syllable, Boulder, Colorado, October 21-23, 1977. North-Holland Publ. Co., Amsterdam, 1978.

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This volume has as its aim "to exemplify the range of phenomena that a theory of syllables or of segment organization must account for" (3). It contains 17 contributions organized into six sections in the following way:

### 1 INTRODUCTION

Issues and Evidence in Syllabic Phonology, Alan Bell and Joan Bybee Hooper

### 2 MULTIPLE SOURCES OF EVIDENCE: PROSODIC STRUCTURES

The Syllable in Phonological and Prosodic Structure, Patricia J. Donegan and David Stampe

Heavy Syllables and Stress, Deborah Ohsiek

### 3 LANGUAGE ANALYSES: UNUSUAL SEGMENT ORGANIZATIONS

Syllables, Segments, and the Northwest Caucasian Languages, Stephen R. Anderson

Syllabication in Northwest Indian Languages, with Remarks on the Nature of Syllabic Stops and Affricates, James E. Hoard

The Syllable as a Structural Unit in Estonian, Ilse Lehiste

Ballistic and Controlled Syllables in Otomanguean Languages, Calvin R. Rensch  
Segment Organization and the Syllable in Tamazight Berber, Jilali Saib

### 4 INSTRUMENTAL PHONETICS: COARTICULATION & CONCATENATION

Syllables as Concatenative Phonetic Units, Osamu Fujimura and Julie Lovins

Articulatory Units: Segments or Syllables?, Thomas Gay

Segment Duration, Voicing, and the Syllable, Leigh Lisker

### 5 DEVELOPING PHONOLOGIES: RULES, CONSTRAINTS, & RHYTHM

The Role of the Syllable in Phonological Development, David Ingram

Phonological Units in Beginning Speech, Lise Menn

The Development of Phonological Rhythm, George D. Allen and Sarah Hawkins

### 6 SPEECH DISTORTIONS: POSITIONAL & SEGMENTAL PATTERNS

Segment Structure and the Syllable in Aphasia, Sheila E. Blumstein

Speech Errors inside the Syllable, Donald G. MacKay

Where You Can Shove Infixes, James D. McCawley

plus two useful author and subject indices.

Those who tend to purchase this volume on the strength of its title should not find themselves misled in two ways. First, I take the risk of making the obvious reviewer's criticism by forcing the open door of an inaccurate title. This volume does not contain discussions of syllables and segments in the balanced sort of way the title suggests. The editors' little joke in their 'Preamble' to the effect that "Nowhere in this book is there a definition offered for the term 'syllable'" falls dead in that nowhere in the book is there a definition of the term 'segment' either, nor of much else, but it does show that their money is definitely on the first half of the volume's title. This is not bad in itself, but it does indicate that the statement of the aim as given above contains a far more accurate one: this book is about *syllables and segment organization* (and this is repeated again on p. 22 in the final lines of Bell and Hooper's 'Introduction': "It is our hope that the discussions we present here... will provide the perspective necessary to approach a general theory of segment organization and the syllable").

Second, I presume that a reviewer of this volume cannot get around noting in his preface the slightly bewildering attitude of the editors towards the notion of '(phonological) theory'. While the last-given quote may be called plainly careful in this respect, there is also a longer passage in the 'Introduction' where they apparently attempt to explain their caution: "In many cases [these studies are] exploratory; but throughout the theme of bringing together insights from several sources will be found. *We could not at the same time cover the parallel research activity in phonological theory, intimately related as the two areas are.* Phonological theory must turn to evidence beyond the strictly phonological to resolve the issues it uncovers; and conversely, further development of phonological theory is essential to the eventual understanding of the relations among the varied phenomena associated with the syllable" (3). I do not understand this, and I have not found anyone who does. To me this passage obviously argues for the inclusion (note the emphasis added by me) of phonological 'theory' rather than the reverse, although in the editors' spirit it shouldn't. Or, to put it another way: on the one hand this volume is, of course, contrary to the editors' warning, loaded with phonological 'theory' of various diverse types, and there seems little reason to deny this. On the other, one feels that they want to drive it home from the outset that they have no concern, segment- or syllable-wise, with what some may recall having seen characterized as "patch-up jobs on a hulking machinery that uncontrollably generates excesses". Independently of the scientific merit of this qualification, however, and independently of whether the editors' narrow interpretation of this volume's scope has led them to produce a good or bad book in this case, a fair number of publications at the time of, or immediately after its inception (the symposium on Segment Organization and the Syllable(!) held in Boulder, Colorado, October 21-23, 1977) showed that quite interesting observations can be made, and quite an amount of insight gained, in the areas now excluded. None of this research, or any of its earlier predecessors (work by Hyman, Kahn, Goldsmith, Leben, Williams, etc.; see also articles in Hyman 1977; Fromkin 1978; Napoli 1978; Safir 1979; Aronoff and Kean, forthcoming) is represented here, and this ought to be noted.

Obviously it is a completely impossible task to do full justice to each contribution of a volume of this size in the space available here, and no such attempt will be made. Rather, I will follow standard procedure and select a handful of papers more or less within my own fields of interest and which for various reasons struck me as warranting more elaborate comments; I will broach the remaining ones only briefly. The papers selected are those by Donegan and Stampe, Anderson, Lehiste, Saib, and Fujimura and Lovins.

Donegan and Stampe in 'The Syllable in Phonological and Prosodic Structure' discuss their semi-familiar model including rules vs. 'natural processes'. It is a sad thing to find that even after a decade of work on this so-called 'Natural phonology' the presentation of developments within this branch has not developed beyond overdone speeches for reelection. I cannot help finding myself completely put off by passages such as:

The fundamental tempo of speech *seems* to vary little from language to language, and we *suppose* it is set at the rate of comfortable articulation of typical syllables. We find impressive differences in the rate at which we can repeat different articulations, and we *suspect* that this is the reason behind a number of constraints on syllable structure. ... *Presumably the tendency* of certain features to extend their domain is, *at least in part*, due to temporal constraints. If nasality is apt to spread over adjacent sonorants, this is *surely not unrelated* to the markedly slower tempo at which nasality values can be switched in sonorants [a  $\tilde{a}$  a  $\tilde{a}$ ...] than in nonsonorants [dndn...]. We *suspect*, further, that *certain* consonant re-articulations within a syllable, e.g. aspiration as in Grassmann's Law; glottalization, exemplified by root structure constraints in Caucasian (Catford, 1977); and voicing, e.g. Dahl's Law in Bantu (Kimenyi, 1977); etc. are due to *similar* timing constraints. (33)

This is (at least...) ten hedges in six sentences (where the emphases are, of course, mine), and it makes one die for an arrow surrounded by a little bit of white space. There is also a proliferation here of "simply's", "merely's", and "obviously's", as in:

- (i) But let us simply assume that this optional assimilation of [r] is obligatory within syllables. (25)
- (ii) Such discrepancies indicate that the alternations of *m-* are not synchronically assimilative at all, but merely conventional. (27)
- (iii) While the claim is true in many languages and, in fact, states an obviously *optimal* pattern, it confronts many exceptions. (32)

There are as many "clearly's", "roughly speaking's", and "we cannot do justice to here's". The latter phrase, and quite a number of other important but opaque passages, are accompanied by a reference to a "Donegan and Stampe (to appear)" for clarification, but this is not contained in the bibliography. At the point where the authors inform us that they "have so far been speaking of 'natural processes' which reflect phonetic constraints" the notion 'natural process' has not occurred in one single instance. One of the authors' off-hand references to exotic languages I happened to check, in fact the one prefixed with "simply" in (i), struck me as quite

the opposite on consultation of the original source. Quote (i) is contained in a discussion of a Lardil phenomenon noted by Hale (1973: 439, fn.) who “expresses puzzlement over the fact that [r], which becomes [n] optionally before a nasal, becomes [n] obligatorily before a *deleted* nasal” (25): thus underlying /karmukarmu/ ‘skinny’ is related to *karmukarmu-n/kanmukanmu-n*, but *karmukan/kanmukan* where stem-final *-mu* has been deleted. (i) is intended to explain this, since after (first) deletion of *-u* the syllable-division will be *kar.mu.karm* (next to *kar.mu.kar.mu-n*). But we are not given even the slightest further indication of Lardil syllable structure here (nor by Hale), and Hale’s information that the process also has a nonnasal product *kadmukan* is withheld. This leaves one with the question whether, and if so why (within a natural phonology of Lardil), *kadmukad* is out, whether, and if so why, *karmukanmu-n* is out, etc. This phenomenon does not appear to be simple at all, and strikes one as a further indication of the well-known maxim that underresearched data lack consequences by definition.

Underneath all this is a set of claims which I have not been able to promote on my notepad to a coherent theory or part thereof. As far as I am aware, these claims comprise the following. In phonology there is a basic division between (conventional) rules and (natural) processes. Syllabic and accentual conditions play a role only among the latter. Thus, in English, for example, the opportunity to assimilate *n* to *g* either optionally or obligatorily by a natural process depends on the place of accent: *cóngress* vs. *congréssional/congréssional*, while assimilation of (co)*n* to *t* by conventional rule is always obligatory: *cómbine* vs. *combine*. Influence of syllabic structure may take place quite deeply in the phonology of a language (as supposedly in the Lardil example), but this does not imply that the syllabic constraints are necessarily phonological themselves: they may very well be derived from phonetic constraints (sections 1–3). Domains of processes are hierarchical in that processes obligatory within the ‘measure’ are so within the syllable as well. This holds for English stop assimilation, for instance; since this is optional at the boards of the measure we get pairs such as [sã:nd,mã:n – sã:mb,mã:n] (obligatory in the syllable), and [ʃud.ɳt'gou – ʃug.ŋk'gou] (obligatory in the measure). For ‘demarcative’ features the hierarchy is reversed. There is no process limited to the domain segment, and the authors believe that “segments *per se* play no role whatever in natural phonological processing” (28) (section 4). One wishes that the authors had devoted the remaining six pages of their paper to some further clarification (dare I say ‘semi’-formalization) of these issues within their framework. Instead, we need an up-dated version of Bjarkman (1975), since on this feeble basis they go on to discuss the status of the syllable. Having provided as a definition that “clearly” syllabification “is the *mapping* of a segmental representation onto a prosodic pattern”, i.e. “the way the words are put to the music”, the authors reveal that a syllable has a “rise” and a “fall”; that the slope towards the most prominent point is steep (the principle of maximal contrast leading to [pa] as the “universal” syllable, and explaining several dissimilations); that accent and timing play a role in all this; that to these claims “exceptions remain”; and that length is a property of syllables rather than of their individual segments. Through a complete lack of analysis

(beyond one superficial example, if even that) per haphazardly chosen language, through a lack of concern with the reader's natural curiosity, and through incantations such as "the differences are a matter of degree" and "perception is, in essence, causal analysis (Donegan and Stampe (to appear))" I find these unilluminating commonplaces. In this light, the authors' conclusion that "the syllable, which has not enjoyed a very solid place in linguistic theory, may in fact be the basic element in the relationship of language and speech" is beyond evaluation.

In Stephen Anderson's contribution 'Syllables, Segments, and the Northwest Caucasian Languages' one is shown, as is usual with this author, some unexpected corners of phonological analysis. At the same time, the main drawback of this paper is that it contains one major inconsistency of organization which several rereadings have not helped me to solve. The paper consists of two parts, the first of which is an annotated survey of the discussion between (the structuralist) Kuipers and (the generativist) Halle on the question whether Kabardian is (Kuipers) or is not (Halle) a "vowelless" language. The second part deals with some aspects of the syllable-structure of Kabardian and some related languages, and incorporates the findings of the first part. This sounds reasonable in theory, in practice one is left with mixed feelings. Lack of space keeps me from reiterating here the specific aspects of the Kuipers/Halle controversy on Kabardian. The general idea is that the large inventory of phonetic vowels of the language can be reduced by predicting the quality of many of them from surrounding consonants or glides. In the end this leaves the two vowels *ə* and *a*. I urge the interested reader to consult on this the original sources (Kuipers 1968, 1976; Halle 1970, which make interesting reading anyway); just as in Donegan and Stampe's case, comprehension of the text is seriously hampered by lack of relevant data: in this discussion of "a dramatic single issue" (47) of an apparently unique language the reader is offered three words of that language in 12 pages of text. This aside, from this stage onwards Anderson proceeds to point out some possible misinterpretations on Halle's part, leading to the conclusion that all occurrences of both *ə* and *a* will be predictable by general rule of Kabardian phonology, and that "Kuipers' vowelless analysis of Kabardian is indeed a coherent and interesting one" (53).

In the second part Anderson goes on to develop a framework in which some of the consequences of this analysis can be captured. The main assumptions are that stress must be assigned to vowelless syllables, and that there must be a way to represent some of the consonant clusters of the language as single consonants at the phonological level since they "act as" single ones in some ways. For example, (1) below is the underlying representation of *t'p'an* 'our educating it':

- (1)     \$        \$  
           T     P     n  
           + constr.  
           glottis

This undergoes the following rules:

(2)	\$	\$	>	\$	\$	>	\$	\$	>	\$
	+ stress	—stress		+ stress	—stress		+ stress			
	T	P		+ syll	—syll		—syll	+ syll		
	+c.g.			T	P		T	P		+c.g.
		n		+c.g.						
	\$	\$	>	\$	\$	>	\$	\$	>	\$
	—stress			+ stress	—stress		+ stress			
	—syll	—syll		+ syll	—syll		—syll	+ syll		—syll
	n	T		P	ə		T	P		ə
				+c.g.	—c.g.		+c.g.	—c.g.		—c.g.

'Names' that one could supply these rules with are 'stress rule', 'syllabicity assignment', 'diphthongization', 'sonorization', and 'final syllabification'. Such an analysis strikes me as astute. I, too, agree with Anderson that "aspects of this proposed development are sketchy and in need of further refinement and formalization", but I do not agree that this concerns only "some" aspects and that the outline is "clear". I think the outline raises a host of questions of why and how, which I would very much like to see raised, discussed and at least partly answered before, as a reader, I can begin to form an opinion on suggestions of this type. (Is it useful for an \$ to dominate solely one [—syll]? Why does *ən* in the final stage not dominate one [—c.g.]? Are these questions at all relevant, or are there more important ones?). This is even more so since, having offered a framework in which it is possible to capture aspects of vowelless languages, Anderson completely surprises the reader with the following passage in his conclusions on Kabardian:

- (iv) We should note that we do not have to follow Kuipers' analysis all the way to the end in order to derive some of the interesting consequences presented above. ... The appropriateness of representing /a/ as a 'structural' vowel results from the fact that syllables containing it are always assigned full syllabicity, as opposed to those containing schwa: ... In addition, certain limitations on the cooccurrence of /a/ quality with /i/ and /u/ quality suggests that the parallel proposed by Kuipers is somewhat illusory. Even though syllables with /a/ may be assigned a structural vowel, however, the case is quite different for schwa, and the result is that we arrive at a 'one-vowel' analysis of Kabardian. (56–57)

If this is true, it is a major organizational oddity in that the reader has been first led to see the reasonableness of the vowelless analysis in the first part of the paper and is now urged to accept the opposite view on the evidence of (iv). Furthermore, if it is true that "[n]othing in [1–2] would seem to be beyond the limits of proposals that have already been made for other languages, though their combined effect is to make possible the radical analysis of Kabardian" (56), then this is a feather in

the cap of the combined proposals of the first part, but a liability after (iv) which now falsifies them. In view of this, Anderson's final conclusion – to the effect that “[an] apparently appropriate, if controversial, analysis of an exotic language type has been discussed above, which depends crucially on certain recent theoretical innovations in the conception of phonetic/phonological structure and the rules which manipulate it. As such, this analysis both confirms the correctness of these innovations and deepens our understanding of their content. This is, of course, the object of the interplay of data and theoretical discussion in phonological theory” (58) – is an idealized and not a factual interpretation of his own exposition. While, as for many theoretical proposals, some aspects “should lead to interesting constraints”, the actual presentation as indicated contains hardly any data whatsoever, and its major theoretical claim is questionable in view of its excessive power given the type of phenomena it is intended to account for.

Anyone in search of *prima facie* evidence of the inadequacy of a linear string of bare segments should consult in this volume, before anything else, Ilse Lehiste's contribution on ‘The Syllable as a Structural Unit in Estonian’. The purpose of this paper is “to assemble and systematize the available evidence for syllables and disyllabic sequences as elements of Estonian phonological structure” (73). This is done in a survey of the large amount of Lehiste's own work on the subject (and thus the contents can be found elsewhere but there is no reason to hold that against such a lucid summary as this one), and she presents “evidence from morphophonemics” (this is on p. 81, and it is not concerned with diachronics as p. 73 will have it), “from the quantity system, and from the metric structure of Estonian folk songs that speaks for the reality of syllables as well as for the higher-level units of disyllabic sequences and words”. The morphophonemic evidence is concerned with the (both qualitative and quantitative) degree change manifest in, for example, ‘strong degree’ *luba* ‘permission’ (nom. sg.) vs. ‘weak degree’ *loa* (gen. sg.), and *kappi* ‘cupboard’ (part. sg.) vs. *kapi* (gen. sg.). Whatever the direction of the process, attempts to formulate the conditional context of this process in purely segmental terms runs aground in ad hoc statements of complex-looking environments. In syllabic terms, however, “[q]ualitative degree change affects the consonant between the first and second syllable of a disyllabic stem. Quantitative degree change may affect the intervocalic consonant... or the whole first syllable of the disyllabic sequence” (73). Thus, given “the rule for syllabication, the conditioning factors become transparent. But the necessity to state the placement of syllable boundaries naturally presupposes the existence of syllables – which needed to be demonstrated”. Furthermore, the “existence of disyllabic sequences as structural units emerges from the phenomenon of degree change itself: only consonants within the disyllabic sequence, at the boundary between the first and second syllable of a stem, are subject to degree change” (77), cf. *suka* ‘stocking’ (gen. sg.) vs. *sukka* (part. sg.), but related *ka-suka* ‘fur coat’ (gen. sg.) vs. *ka-suka-t* (part. sg.).

Evidence from the “quality system” concerns the structural make-up of Estonian polysyllabic words in terms of the notions short, long, and overlong. This three-way

contrast occurs both in vowels and consonants (and hence in syllables) and its distribution depends heavily on the Estonian syllable. Among the distribution statements are, for example: "Contrasts in vowel quantity occur only in the first syllable of a word"; "three consonant quantity contrasts occur... between odd- and even-numbered syllables of the word"; "Three-way consonant quantity oppositions also occur between even- and odd-numbered syllables if the preceding syllable is overlong. If the preceding syllable is either short or long, only two contrastive consonant quantities occur" (78), etc. Again, as one can see, not only the syllable but also the disyllabic unit plays an important role in these statements. Lehiste then winds up with (v):

- (v) I interpret the quantity system of Estonian as building from segmental quantity to the quantity of disyllabic units by going through two levels at which a reduction in information takes place. Going from the segment to the syllable, there is a many-to-one mapping of segmental quantity into syllabic quantity, as a result of which the number of contrastive quantity structures is significantly reduced. Going from the syllable to the disyllabic sequence, a further reduction in information takes place: the contrastive quantity structures are realized over the disyllabic sequence in such a way that the durational manifestation of the vowel of the second syllable is predictable from the duration of the first syllable: longest after a short syllable, intermediate after a long syllable, and shortest after an overlong syllable.

The metrical structure of Estonian folk songs comprises lines of "eight syllables arranged into four trochaic feet". The notion of the Estonian syllable further comes into play here in "the exclusion of short initial syllables from ictus positions and long initial syllables from non-ictus positions". Furthermore, the "folk song line also provides evidence for the reality of words as units characterized by properties not exhaustively covered by specification of their segmental and syllabic structure: it is the first syllables of *words* whose occurrence is determined by the exclusion rules" (80–81).

In her conclusion, and in accord with the general tone of this volume, Lehiste expresses the "hope that a phonological theory will ultimately emerge that will do justice to the phonological structure of Estonian" (82). In fact, I can do little more than tie in with this immediately, and point out that recently at least partial fulfillment of this hope may have emerged in the work of Prince (1980), which is based on ideas shared with Leben, Selkirk, McCarthy (1979, which is relevant in relation to Ohsiek's contribution on 'Heavy Syllables and Stress' to this volume, not to be elaborately discussed here), and others. Taking up Leben's (1977) idea that "Lehiste's constraints on the sequencing of long and overlong segments... will follow if overlength is a phonological property of syllables" (27), Prince argues for the introduction of the notion *foot* in an account of Estonian quantity, enabling himself to note *en route* that Lehiste's "[c]umbersome reference to sequence and quantity resolves into the simple notion 'foot-final'" (47), concluding that "her insight is best construed in terms of the notion 'foot', and that Lehiste's 'bisyllabic unit' is a reasonable approxim-

ation thereto, as near as you can get without acknowledging prosody" (54). Referring to the passage from Lehiste's contribution given earlier in (v), Prince proposes to replace these with the views expressed in (vi):

- (vi) ... a change of description is a change of world (47) ... Even if Lehiste's hierarchy is de-arithmetized, prosodized, as it were, its role in phonetic description would remain fundamentally different from ours. Lehiste conceives of the hierarchy in what we might call a 'bottom up' fashion ... Behind Lehiste's theory we can perhaps discern a kind of Structuralist phonemics, with 'separation of levels' projected into phonology itself; and along with it, a view of speech perception as a necessarily bottom-up operation, segmenting the acoustic signal into phones, phonemes, syllables, groups of syllables, etc. ... Our view, on the other hand, is that each level in the hierarchy contributes independently, that higher-order categories directly determine phonetic properties that have been (mis-)interpreted as evidence for a richer set of lower-order categories (segments) ... [And] just as the present approach challenges the 'separation of prosodic levels' within phonetic description so does it implicitly challenge the strictly bottom-up view of speech perception. ... Notice that higher-order analysis need not wait until lower-level analysis is complete; if, as we have suggested, the *foot* of Estonian has a stereotypical temporal pattern, it may well be possible to extract valuable clues [cues?] to foot-structure from rather gross durational information; this in parallel with or even in advance of detailed segmental classification. (54-55)

Unfortunately, this series of quotes does not even begin to represent the factual analysis, and lack of space forbids me to elaborate. Any reader interested in more Estonian quantity should get hold of Prince's work, which may have appeared in *Linguistic Inquiry* as this review goes to the press.

Saib's contribution on 'Segment Organization and the Syllable in Tamazight Berber' has two different faces: some of it strikes one as a run-of-the-mill motivation for the incorporation of the syllable in phonology, the remainder, on the other hand, as superfluous with a view to its topic, or at least very foggy. A variant of the standard argument for the 'syllable boundary' appears here in the shape of a rule of schwa syncope in T.B., where \_\_\_\_\_{CV, #} had better be replaced by \_\_\_\_\_ for 'open syllable', cf. *θixəf-θ* (no gloss provided) vs. *θixəf-θ-awin* → *θixəf-awin*. A second example employs a rule of epenthesis with, presumably, the segmental context {#, C}\_\_\_\_\_ CC, cf. *n #θ-ɬxamθ* 'of the tent' → *nəθ-xamθ*; it may also apply to the output of syncope: *sɔy-ix* 'I brought' → *səy-ix*, and *axɬm-əx* (no gloss provided) → *ɬxɬm-əx*. The syllabic context is presumably \_\_\_\_\_C.C. Examples of this type have been around for quite a while. Unfortunately, Saib apparently feels that he has to show more than this, and in fact he puts forward a set of surface phonetic constraints which, for instance, exclude (i) schwa in an open syllable; and (ii) word-initial consonant clusters. His terminology is then: "The motivation for ... syncope is the constraint [(i)] mentioned above: no schwa vowel can occur in an open syllable. In [θixəf-θ-awin] the /+θ/ suffix deletion, required by the plural formation, creates a situation whereby the schwa occurs in an open syllable. This is prohibited, hence the deletion"; and "Following the application of the syncope rule, word-initial sequences of two C's are

created ..., violating constraint [(ii)]. An epenthesis rule ... must therefore apply to restore the preferred syllable". I cannot make out what this means, other than in a vague sort of way. Surely, it cannot be taken to mean literally that e.g. constraint (i) directly implements syncope, because there would be many other ways by which constraint (i) could do this (and as the proliferating study of 'conspiracies' has shown only the imagination appears to be the limit). Conversely, we can only trivially say that syncope allows constraint (i) to be stated. And so on for epenthesis. It seems to me that Saib's remarks on this merely cloud the very real issue of the lack of insight inherent in some formal mechanisms such as the 'brace'-notation as used in cases such as immediately above (this issue, in its turn, has been insightfully discussed by Kahn (1976), which Saib does not mention).

Three pages of Saib's paper are devoted to the phenomenon of emphasis or 'pharyngealization' in T.B. Through this process a syllable bears pharyngealization if it contains such a consonant. Adjacent syllables may tune in: the preceding one if it is open, and the following one if the preceding syllable is open. At least, this is a "hopefully accurate" characterization, based on Saib's "intuitions and judgments" in "the absence of a thorough instrumental study" (99). Some examples (where italicized C is basically emphasized):

- (3) rightward: zu.r-aθ 'visit', but: *ɗ*ur-xas 'I went around it'  
 leftward: i-x.r*ɪ*.*ɗ*-əŋ 'bags'  
 both: a.*ɗ*a.r-i.nu 'my foot'

Saib presents a strawman segmental account which is observationally inadequate to begin with and thus might have been left unstated. He concludes that "[r]ules making reference to syllabified strings are therefore required". But, as shown above, even if adequate segmental rules *can* be formulated, rules referring to syllabic structure in some way (not necessarily by *·*) may well be preferable, and this may be such a case. It appears to me that the paper could have ended here. The particular formulation of the rules of emphasis given by Saib strikes me as superfluous, given a lack of basic formal theory. The final two pages deal with obstruent + sonorant ≠ sequences in T.B., such as *ifr* 'wing', which violate Hooper's (1976) idea that syllable-codas are arranged according to a principle of 'maximal strength' decreasing towards the nucleus. Saib concludes that T.B. "thus, stands as a language where the universal tendency ... does not fully obtain". This does not seem to be an overly venturesome claim. He goes on to state that "the sequencing of C's in the coda according to their strength may not work. [The examples] also suggest that the reason for this failure is that affixes are involved" (102–103). Maybe I have missed something if I admit that I do not see how this tallies with a passage earlier on where we find that "[t]he non-occurrence of \*[θixəθ] for [θixθ] 'grief' can be explained by referring to the suffixal nature of the final /+θ/ ... [but this] is not material since we are dealing here with the phonetic syllable" (95). I do not see how this harmonizes, and the discussion here strikes me as underresearched. Thus, this paper is useful as far

as it goes, but much of it shows that Saib's "hop[e] ... that further research on the syllable and segment organization is undertaken", expressed in his concluding remarks, is appropriate in the case of T.B. (for some indication of what this can lead to the reader is referred to Vergnaud, Halle et al. 1978).

Arguably, the highlight of this volume is Fujimura and Lovins' contribution on 'Syllables as Concatenative Phonetic Units', if only for the notion of 'phonetic affix' making its appearance here. That is, "English syllables can be viewed as composed of a *core*, comprising all elements that have inherent cohesion to the nucleus, plus optional *phonetic affixes*. Affixes can only be linked to a core-final element (an obstruent, nasal, liquid, or glide – diphthongization or elongation of a vowel); they must agree with this element in voicing; and they are always apical obstruents. Examples are *tends* /ten/ + /d/ + /z/ (two affixes), *tents* /tent/ + /s/ (one), and *tent* /tent/ (no affix because the voicing value changes in the coda). The word *sixths* /sik/ + /s/ + /θ/ + /s/ has three affixes, which seems to be the practical limit" (111). Within the framework of this article, these ideas explain a number of things, for example (I take the liberty of quoting further):

- (vii) "The apical consonants in affixal position are very stable in phonetic quality and relatively independent from the core ... The vast phonetic difference in manifestations of the final nasal element in a contrast such as /tent/ vs. /tend/, as discussed in Section 2, can be naturally explained by this interpretation: the final /t/ belongs to the core together with /n/, but /d/ does not" (111), and in Section 2 we find:

"It is well known that in English the vowel is appreciably longer when it is followed by a tautosyllabic lax obstruent as opposed to a tensed one". The observation then is that "the phonetic 'segment' for /N/ (any nasal consonant) is disproportionately short before /C<sub>T</sub>/. Sometimes a nasal murmur (i.e. the period of oral closure) is hardly identifiable. Malécot (1960) demonstrated in a perceptual experiment the importance of the nasalization of the vowel nucleus, rather than the presence of a nasal murmur, as the cue for the nasal element in /VNC<sub>T</sub>/ forms". (110)

- (viii) "... we need to introduce one additional functional concept, that of *vowel affinity*, which we take to reflect a universal principle. The sequential ordering of articulatory gestures in time within a syllable core is given by a set of phonetic realization rules which are to a large extent peculiar to English. The temporal aspect of these realization rules, roughly the relative timing of individual articulatory gestures, reflects the vowel affinity values of particular syllable features, in the given language.

We note that the word-final clusters in English that form such troublesome apparent exceptions to the vowel affinity principle, such as the occurrence of both /dz/ and /zd/ ... cease to be exceptions when parts of them, as defined above, are handled as 'affixes'. This is because the hierarchy holds only within the syllable core". (112)

- (ix) "Even though there are relatively few combinations of a glide, liquid, or nasal and a (tense) obstruent at the same time in core-final position, forms such as *ounce* and *spoilt* do exist ... When such combinations occur, however, there is a strong tendency for the sonorant gesture to become integrated into the vowel articulation. The nasal element, in particular, exhibits essentially no nasal murmur and is manifested almost exclusively as nasalization of the vowel ... The important point is that cores are subject to such phonetic constraints, but not syllables, unless they have no affixes". (113)

These passages struck me as most exciting in this solid piece of interdisciplinary work. Beside these, however, there is a number of no less worthwhile ideas and observations, which I cannot go into here (and their sheer number defies bare enumeration as well). Suffice it to say, then, that the general concern of the authors is "with the internal structure of syllables and with what happens when syllables are shoved together at 'syllable boundaries'" (108), based on the apparently well-motivated observation that, if "[s]egmental units are significant at the phonetic level if and only if they constitute basic elements for a well-defined process of concatenation", that "phoneme-sized segments are not appropriate as concatenative units for describing speech phenomena", and "[s]yllables are ... from this point of view" (107). *En route*, they subsequently deal with properties of initial and final consonant clusters, English aspiration, ambisyllabicity and several cases of assimilation, all of them from the point of view just expressed. In fact, together with the contributions by Gay and Lisker (see below), in sum Section 4: 'Instrumental Phonetics: Coarticulation and Concatenation', this article constitutes, at least to me, the most readable and instructive part of *Syllables and Segments*.

Briefly, the remaining twelve contributions to *Syllables and Segments* are as follows. The introduction 'Issues and Evidence in Syllabic Phonology' is as good as one may expect of two scholars who have occupied themselves with the subject for years in their own individual lines of research. It is a useful survey, although perhaps slightly superficial as well (that is, even granted the natural limits on size). Not unexpectedly, it is inaccurate when the punch-line to "[t]he relationships among the phenomena in question are too complex to admit of explanation by simple schemes, which has sometimes led phonologists to ignore or avoid the problem altogether and not recognize any unit of organization between the segment and the word" is: "e.g. Chomsky and Halle (1968)" (4). As recently noted by McCarthy (1979: 444) "Chomsky and Halle (1968) virtually propose two different theories of the role of syllable weight in phonological rules", and although their hairy-looking notation, as they themselves concede, "indicates a defect in their theory", this defect is in fact the source of much recent works of decidedly theoretical flavour, such as those mentioned in the first few lines of this review. In the same vein, "a procedure for placing syllable boundaries around words and among the segments of words" (4) is incorrectly attributed to Kahn (1976). This work, however, contains a line to the effect that "I exemplify the basic failing of certain analyses that have sought to simplify rules by reference to syllable boundary by briefly reviewing...". In a binary world the editors therefore appear to give west-coast evaluations of east-coast theories, which is too complex a subject to pursue here. Those interested are referred to the bibliography below, and, for a first introduction, to Lightfoot (1979).

Ohsiek's topic is the observation that 'heavy' syllables play a major role as favoured carriers of main stress in many languages. An experiment using Arabic data, which has "a nearly exceptionless version of a heavy syllable stress rule" lends support to the idea that "some phonetic correlates of stress are automatically present to a significant degree in all heavy syllables, whether or not they are stressed". These characteristics may become "phonologized into the linguistic feature of stress".

Hoard describes the "algebraic formula" posing as words in Northwest Indian languages. Considerable simplifications follow for these, if we recognize syllabic stops (up to voiceless ones) and affricates, and those in their turn, as parts of so-called 'complex segments', in which clusters share a number of features under one head. This paper is amply decorated with fascinating data, and the text in between strikes one as modest, careful, and well presented.

Rensch discusses the basic distinction between "ballistic" and "controlled" syllables in the Mesoamerican Otomanguean languages, which "has proved to be crucial in the understanding of these phonological systems". He outlines part of the historical origin of the distinction (which involves aspiration, breathy articulation of vowels, fortis articulation of consonants, interaction with vowel duration and tone phenomena; the origin involves syllable-initial vs. syllable-final *h*) by reference to other languages of the family, and deals with some of its phonetico-phonological characteristics.

The articles by Gay and Lisker are in the phonetic section, together with Fujimura and Lovins. All deal with the phenomenon of coarticulation. Gay discusses the question "of whether the motor input to the speech string is organized in terms of phoneme- or syllable-size units". He observes that "a major obstacle to a solution is the nature of the speech signal available", and discusses the evidence for the existing models of speech programming (as usual Kozhevnikov and Chistovich vs. Henke), and more recent research in this area. After the description of an experiment eliciting anticipatory effects in VCV and VCCV syllables, he concludes that there are "convincing" reasons "for rejecting the concept of a CV syllable as the basic unit in articulatory programming", and "it is reasonable to speculate that the motor input to the speech mechanisms seems to operate by simple rules on phoneme-sized units and within a specifiable temporal field".

Lisker notes that "to obtain evidence for the syllable as a phonetic unit, it is not enough to show the existence of temporal coarticulation between adjacent segments. We must find that coarticulatory linkages are markedly weaker between segments said to belong to different syllables". He then describes an experiment investigating durational phenomena in CVCV examples, as regards the CVC portion, duration of aspiration, duration of the stressed vowel, and the medial consonant closure. Rather more pessimistically than his predecessor he concludes that the data thus obtained "are not likely to resolve our questions as to the reality of the syllable as a unit of articulatory organization".

In the section 'Developing Phonologies' Ingram's contribution is a survey which attempts "to pull together the various references to syllables in research on child language". The evidence for the syllable here comes from "processes used to simplify adult words" (for some reason Ingram calls these "phonological processes"), where both deletion and reduplication affect entire syllables; and from the acquisition of preferred canonical shapes, where there is evidence "that children are not only acquiring segments but entire syllables" of certain types. Extrapolation to adult phonology, however, would be ill-advised (one would, by now, want Van Ginneken (1917) to be included in a survey of this type).

Menn sets out to construct a production model for early child phonology. She emphasizes, in the spirit of Ingram, that child phonology is not just the phonology of another language (lest anyone should think so). It lacks some adult phenomena, such as morphophonemic variation, and shows peculiarities such as relatively extensive types of harmony. She points out that there "are two principal phenomena of child phonology which must be captured by any model: 1) there is a high degree of regularity in the relation between most child forms and the adult model form; and 2) the output forms produced by children obey severe phonotactic constraints". Building – in one of the most sophisticated accounts in this volume – on earlier work by Ingram (1974), Menn (1975), and Kiparsky and Menn (1977), she focuses on the idea "that many rules are best seen in terms of the satisfaction of output constraints". One important aspect of her subsequent account is her appeal to the 'autosegmental' type of phonology (Goldsmith 1976; Clements 1976), as a useful notation to capture some of the phenomena of child phonology, e.g. place harmony within monosyllabic words where *guk* represents *stuck*, *duck*, and *truck*. In terms of her own presentation, however, it is not clear whether this appeal goes beyond a superficial likeness. In the end, she views her work as a preamble to the construction of a "description of the development from child learner to mature speaker at the model-making level; from *that* level of description, the beginnings of a psycholinguistic phonology may come".

Allen and Hawkins try to find evidence for the features 'heavy' and 'intonation' of the rhythmic system of spoken English phrases found in Vanderslice and Ladefoged (1972). They find that in reduction in child language heavy syllables (fully articulated ones) are mostly maintained where light ones are deleted. Furthermore, the "nuclear accented syllable" (representing 'intonation') of a phrase in infant speech is represented by a drastic pitch change in final position, and by a change in pitch relation to adjacent syllables in nonfinal position.

In the first article of the section on 'Speech Distortion' Blumstein uses evidence from aphasia as "a window into the operating principles involved in normal language functioning". As a motivation for the claim that "the evidence provided will support the independence of both segment structure and syllable structure on the one hand, and the complex interrelations of these two structures on the other", she cites among her findings, for example, that "[t]hese results suggest that although the syllable may be considered the unit for articulatory programming, and sequences of segments are programmed as integrated units, the nature of sequential dependencies and the complexity of the articulatory programming vary as a function of the nature of the particular segment. Specifically, there seems to be a sharp distinction between the effects of consonants and vowels on the articulatory programming of syllable-sized units. The juxtaposition of two consonants seems to form a more cohesive programmed articulatory sequence than does the juxtaposition of a consonant followed by a vowel".

MacKay links in with some "basic facts" about speech errors: "Some segments such as consonant clusters and even syllables themselves can behave as a unit in speech errors. Segments that interchange usually share many common features and always

share major class features: vowels always interchange with vowels and consonants with consonants. Interchanging units always belong to the same syllabic position, e.g. syllable-final consonants never interchange with syllable-initial consonants". He then describes an experiment where subjects were asked to interchange *b* and *p* in a number of English words. While focusing on this task, they produced a large amount of errors elsewhere in the words, which call for analysis and explanation. The results are claimed to give evidence for features, and several aspects of the internal make-up of English syllables, and a record of the subjects' reaction time per item can be used to argue for or against theories of 'phonological availability'.

Finally, as the odd one out in this section, McCawley discusses the phenomenon of *fuckin'*-infixation in English, as in *inter-fuckin'-disciplinary*, or in *Fusi-fuckin'-yama*. At the risk of making a mountain out of a mole-hill, I find this one of the most disappointing contributions of this volume. Following a syllabic version of the infixation-rule by McCarthy (1977), McCawley proposes that "it is of considerable interest to ask how infixation of expletives affects those words in which there is controversy as to whether the syllables have precise boundaries at all or as to whether a particular segment might be ambisyllabic". This calls for serious action, then, but nothing very serious follows, as regards these issues, from the results obtained from "a questionnaire containing 41 words that meet the stress conditions for expletive infixation", issued to 20 speakers. The level of adequacy of this experiment is characterized by the last line of this article where we are promised that "in the later study that I plan to carry out, I intend to elicit the speakers' pronunciation of each word before eliciting infixed forms and acceptability judgments". In the meantime, one may hope that morphology comes round to the insight that this is not, of course, a curious type of infixation in English but rather, as Tineke Scholten has pointed out to me, one manifestation of the popular game of middle name formation:

As one may have noticed, my selection of five articles from *Syllables and Segments* occasioned both favourable and unfavourable comments, and, in retrospect, my impression is that this holds by and large for the entire collection. Eventually, the volume strikes me as not unlike a pick of recent papers from *IJAL*, *JASA*, *Phonetica*, and the like, based on 'names' as the major criterion rather than on originality. As can be expected in such a case, the result may turn out to be an amalgam of interest, routine, and in between. In itself, the amount of high-standard work contained here may be sufficient for those who argue, perhaps not unreasonably, that this is the most to be expected in any such volume. Perhaps the best policy for others is to consult other reviews first, such as the highly favourable one by Sommerstein (1980), or the semi-review by Awedyk (1980), or to borrow a copy from one's institutional library, or from a colleague on sabbatical leave. Everyone should be able to decide for himself after that.<sup>1</sup>

#### Note

<sup>1</sup> I am grateful to Hans Gilijamse and Mieke Trommelen for commenting on an earlier

version of this review. The volume seems to contain only very few printing errors. These are the ones I noticed: 5, 2fb: Fisher-Jørgensen add *c*; 16, 8fb: vo oids add *c*; 36, 30: last vowel read *long vowel*; 65, 24: labilaized read *labialized*; 94, 2fb: *iz̥i* read *izi*; 95, 17: delete [sufs] to; 95, 19: top open read *to open*; throughout Saib: several glosses missing; 121, 12fb: twoard read *toward*; 144, 2: Ingram (1974) a or b?; 145, 6fb: Menn (1976) a or b?; 148, 23: initial read *initial-*; 150, 26: combing read *combining*; 153, 12: Stampe (1973a) read (1973); 205, 23: ononcritical delete *o*; 214, 10: rule read *rule out*. There are several references in the text to items not contained in the bibliography; I noticed Donegan and Stampe (to appear), Saib (1975, 1978), Fujimura (1974), Ferguson (1975), Menn (unpubl.), and Vihman (forthc.).

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Jacob L. Mey (ed.), *Pragmalinguistics. Theory and Practice*. *Janua Linguarum, Series maior* 85; *Rasmus Rask Studies in Pragmatic Linguistics* 1. Mouton, The Hague, 1979. 444 pp.

Review by Henk Haverkate, University of Amsterdam, Spanish-Portuguese Inst., Jodenbreestraat 23, Amsterdam, The Netherlands.

*Pragmalinguistics* contains 15 papers, arranged in the following sections: 'Theoretical foundations', 'Towards a situational linguistics', 'Patterns of deviance', 'Goals and perspectives', 'Conclusion'. In the preface the editor explains the criteria according to which he has selected the authors for this volume: "... these authors were not selected by the usual standards of name and fame, but rather by a procedure incorporating the following criteria, among others: (1) being known to the Editor as (2) having some interesting ideas on (3) some subject connected with pragmatic linguistics" (p. 5). This procedure has resulted in the collaboration of 15 authors, 12 of whom are affiliated to Scandinavian, for the most part Danish, universities.

As for the present review, I shall confine myself to a discussion of the papers by Bang and Døør, Utaker, Blakar and Andersen, because their contributions in particular are written within a framework that can be tested empirically by both pragmatic and linguistic criteria.

'Language, theory, and conditions for production' (pp. 21-51) by Jørgen C. Bang and Jørgen Døør is introduced as follows: "The purpose of this article is to outline our Marxist approach to pragmatics... On the background of a Marxist political philosophy and philosophy of science, we will make a critical analysis of some dominant linguistic and sociolinguistic theories" (p. 21). The authors first devote