American descriptivist morphology in the 1950s

John Goldsmith
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1 Introduction

I hope in this paper to indicate how American linguists in the middle of the 20th century thought about the nature of morphemes and words, and the relationships found among words and sentences in a language. Leonard Bloomfield’s views in Language (1933) ([5]) set the tone for most of this discussion, and three younger linguists viewed themselves as following up on that work in their influential discussions: Zellig Harris, Charles Hockett, and Eugene Nida. To understand what they were saying and why they were saying it, we have to make an effort to reconstruct their intellectual milieu, but it is a worthwhile effort, because it allows us to perceive our own views today a bit better.\footnote{Two publications by Blevins ([3], [2]) are very good presentations of the linguistic perspective of the linguists we discuss here. Blevins [3] notes that “by any objective measure, the decade between 1945 and 1955 was decisive for the development of modern linguistics. This period saw the ascendance of a distinctive American school of general linguistics that placed an explicit emphasis on synchronic analysis. Over the course of the decade, the focus of study within this school also shifted gradually from the description of languages to the investigation of methods, techniques, and theories about language. Together, these developments ushered in an approach to the study of language which is now largely taken to define the field of linguistics.”} Most of the ways we think about morphology today find their
roots in that work, and my goal is to make their work more accessible to the reader today. These American linguists took themselves to be doing something they called “descriptive linguistics.” They believed that the aspect of language that was best understood was phonology, and that the phoneme was the tool needed to do phonology right. Bear in mind, too, that the phoneme was new, not old; it was cutting edge methodology, and not everyone agreed that looking for phonemes was the right way to study language (linguists in England, for example, have rarely warmed to the idea.) Morphology was not as clearly understood as phonology was, and morphology could only gain from a thoughtful comparison with phonology. But what is morphology? There was a tension between two answers to this question.

One was this: morphology is the study of the next higher level of structure in language, the level above that of phonology, and the level whose units are typically several phonemes in length and typically associated with a meaning or grammatical function. The other answer was that morphology is the study of the internal structure of words. At risk of oversimplifying, the question was whether morphology was the study of morphemes-as-groups-of-phonemes, or the study of words and their internal composition.

The reader may think that this difference is anodyne, but it is not, and even though the reader will not find it spelled out in so many words, the American descriptivists (especially those who followed Bloomfield) thought that the first view, the one that focused on morphemes, was new, revolutionary, and the way of the future. They also thought that the focus on words and on paradigms was old school and probably superannuated, and it was more fruitful to focus on morphemes than it was to focus on words.

This deep skepticism with regard to the word was rarely voiced explicitly; linguists tended in that era to leave the negative comments out about older ideas and what they failed to see. The reader today needs to be alerted to this subtext which was clearer seventy-five years ago than it is today. Occasionally the message is overt; in a book Hockett published in 1987, some twenty years after he stopped doing linguistics, he looked back on his linguistic work, and clarified how he and his colleagues viewed the competition between words and morphemes during what he referred to as the American “Decade of the Morpheme”:

In the nineteenth century, and still for Saussure, the element at the focus of attention in both descriptive and historical word was the word. In his review (1923) of Saussure, Bloomfield suggested that the sentence, rather than the word, should be highlighted, but the post-Bloomfieldians in fact concentrated on the morpheme; only with Chomsky did the American emphasis change to the sentence. The British functional-systemic grammarians, meanwhile, had long been taking the sentence—or, more accurately, the clause—as their major point of departure...

Although Bloomfield spoke of morphemes in his 1926 “Postulates” [4] and his 1933 treatise, he had too much respect for the cantankerous facts of languages and the grammatical function to be as consistent and systematic about morphemes as his followers soon became... Various heckling voices could be heard from across the Atlantic if one took the trouble to listen... [26, 152-53].

Hockett published an influential textbook in 1958 [25], and here too the reader learns about morphemes long before the term word makes an appearance, and when words enter the discussion, the reader learns that unfortunately, the word is one of those terms used by the layman which has no clear meaning, or rather, has at least three meanings, each inconsistent with the others.

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2Anderson [1] notes that early generative theory included a “rich and substantive theory” of morphology which was “taken for granted, though this was based on premises inherited with little examination from earlier structuralist views.”
The other leading textbook of the 1950s was by Gleason [9], who is clearest of all on these matters. Language may be divided into expression and content, where content is roughly the meaning expressed and conveyed. Expression is the side of language best understood, and therein there are two basic units: phonemes and morphemes (11, 52). Words get short shrift; they are mentioned first in the phrase “the traditionally defined words of an utterance,” (43) referring to where we put spaces in our written form of linguistic expression. A bit later he wrote, “we will continue for the present to use word in the rather loose familiar sense without close definition.” (95) His clearest statement ends chapter 8: “The word is one of the most difficult concepts in English morphology to define, though in the vast majority of cases little question can arise as to whether a given sequences of morphemes is or is not a word.” (110). American linguists held the strong belief that linguistics, like any other science, is defined by its methods of analysis. From this belief came the need for a clear starting point of analysis, and a set of practices that could be explained objectively to anyone who is interested, practices which could be replicated by anyone else, on the same or on similar data. It is this implicit obligation that accounts for a good deal of what makes Zellig Harris’s work in the 1940s seem obscure today, because we do not write that way anymore. There is a big difference between what appeared in papers that presented linguistic analyses of particular languages, on the one hand, and papers that addressed methodological questions in phonology or morphology, on the other. A linguist could give a compact account of the phonology or morphology of a language and then publish it in the International Journal of American Linguistics — but only a professional linguist could find it readable at that point; it was soulless and dense. Yet the linguists who were writing those morphologies could also step back and write about how one should actually do morphological analysis, and when they did that, they believed that they were explaining a special kind of human activity (that of doing a morphological analysis) to a reader who is interested in obtaining and developing that skill. Once again: this is something that we do not do anymore, or we do rarely; we do not write papers in which we tell people how to analyze a language. Instead, we present our theory. If we want to understand Harris, Hockett, and Nida, we have to recognize that they were trying to tell us how to carry out the linguist’s job. They were trying to distill the essence of what they had learned about morphological systems over the course of decades of analyzing complex languages, largely among the languages of Native Americans but also among the well-studied languages of Europe.

While these linguists did not always make a point of explicitly pointing out that they were now talking about the human activity of analyzing morphologies, sometimes they actually did come right out and say it. Charles Hockett, for example, did just this (1958 [1965 edition]:274): “A neatly-packaged description of a language can set forth its phonemics, its morphophonemics, and its grammar in separate compartments. But a description can only be produced by the hard work of trained investigators, and the guise in which the language appears to them, as they set out on their analytical task, is not neatly packaged at all. They are forced to trot out bits of evidence, collating by trial and error, until the facts begin to emerge. The investigator cannot directly observe morphemes. What he can discover in the first instance is morphs. His problem is then that of deciding which morphs are properly to be interpreted as allomorphs of the same morpheme.” [25, 274] He continued in the same vein, explaining the epistemological and rhetorical position of the analyst as s/he is engaged in the analysis of a language’s morphology.

Nida [34] is clearly meant to be read as a discussion not of morphology, but of how to write morphologies. On p. 241, he wrote that one should not write, “We add -l to the root” because “in so far as possible the linguist should be completely objective about descriptive statements.

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3The overall study of language in this respect is called “descriptive linguistics,” and is conventionally divided into two parts. Phonology deals with the phonemes and sequences of phonemes. Grammar deals with the morphemes and their combinations.” (11)
The relationship of the speaker, the hearer, or the learner to the language is irrelevant.” If that precept were meant to apply to his own book (which it was not), it would contradict itself, like Epimenides’s paradox. Earlier, he had written, in relation to the sentence in Figure 1,

We “feel” that very goes first with hard and that very hard then goes with the verb. We unite the subject peasants throughout China with all of the predicate work very hard. What we have done in this simple sentence is to discover the pertinent environment of each word or group of words. (87)

That is exactly the kind of prose that Nida tells his reader should not appear in a grammar — but the book in which he wrote it is not a grammar, but rather a treatise on method (also known as a textbook).

Harris, Hockett, and Nida all viewed themselves as engaged in modest, middle of the road linguistics during the period following World War II. Middle of the road linguistics meant the style of analysis that was taught at the summer LSA Institutes during the 1930s, and anyone who was asked would have said that this meant understanding and working out the position set forth by Leonard Bloomfield in his book Language. Let us turn to the picture of language and of linguistics that Bloomfield presented there. 4

--- Figure 1 around here ---

2 Leonard Bloomfield

What best characterized the American style of linguistics that Bloomfield shaped and participated in (and what distinguished it from European efforts) was its insistence on distancing itself from the concepts and categories that had been developed over centuries for the analysis of the classical Indo-European languages. Each language should be analyzed as if it had never been analyzed before, using tools that were designed for general, not language-particular, use. That was fine as a general position, and most linguists felt that the principle had been respected in the development of phonemic analysis. But it was much harder to figure out how something like that could be accomplished for morphology, or syntax. While linguists realized that their treatment of syntax was even more rudimentary than their treatment of morphology, they knew that it was necessary to develop an account of both areas, and some felt that it was high time to get started on that work.

Bloomfield saw the study of language divided into two major components, phonology and semantics (74). 5 (Zellig Harris’s book Methods in Structural Linguistics [20], in contrast, divides the work of the linguist into two parts: phonology and morphology.) Bloomfield’s semantics, in turn, was divided into grammar and lexicon. (138). A subpiece of an utterance that is associated with a meaning is a linguistic form, and a linguistic form that itself contains no linguistic forms is a simple form, or morpheme. Morphemes comprise the ultimate constituents of any utterance. (161) A morpheme is thus a pairing of a string of phonemes (or a set of such strings, we will see in a moment) and a piece of meaning; Bloomfield called such a piece of meaning a sememe. The entire stock of morphemes of the language is its lexicon, (162) and the way in which morphemes are combined in language use is its grammar. (163) 6 That, in a nutshell, is the Bloomfieldian analysis of a language.

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4 Harris [20] noted that morphology had received less attention in recent years, though notable discussions could be found in Sapir’s Language, and Bloomfield’s Language. He also cited Saussure’s Cours, as well as work by Bloch and Trager, Skalica, Trnka, Bernard Bloch, and the 1930 manifesto written by Roman Jakobson, to mention just a few.

5 This may surprise the reader, but it is so!

6 The grammatical operations used by the rules of grammar were of four sorts for Bloomfield: left-to-right order, prosody, morphophonology, and selection (constraints placed on what linguistic items are subject to the
At the end of the 1930s, then, linguists had a reasonably clear notion of the phoneme, clear enough that it could serve as a foundation for the next subfield of linguistics on their agenda, and also a reasonably clear notion of analysis into immediate constituents, or ICs. Bloomfield and his followers had established promising methods which would allow the analysis of a unit as large as a sentence into pieces (typically, but not always, two consecutive pieces), and those pieces were its constituents. The king of England would be analyzed as [the] [king of England], while the king left England would be analyzed as [the king] [left England], and this process could be repeated, so that [king of England] in turn could be analyzed as [king] [of England]. The process would then continue till we arrived at the smallest analytical pieces (perhaps even cutting England into Eng and land). But would there be a natural point in this top-down process where the pieces that were produced were words, with some special characteristics that would distinguish them from larger or smaller constituents which were not words?

The linguist working on the well-studied languages of Europe did not need to worry much about that problem, but the linguist approaching languages spoken outside of Europe had no comfortable assurances that they would know what a word was when they saw it, in a language that had never been studied by linguists before. So Bloomfield was obliged to provide an account of where words came in along the way, and he relied on the thought that a reasonable definition of a word was the smallest unit of language that serve as a complete utterance: “A linguistic form which is never spoken alone is a bound form; all others... are free forms... [p. 160] [and] a word, then, is a free form which does not consist entirely of (two or more) lesser free forms; in brief, a word is a minimum free form.” (178) He made it perfectly clear that he knew that this was really not workable in practice; he remarked that it is not hard to get a speaker to say, “Oh, yes, I guess cran means red” when we ask them about cranberries, but he continued with his job of describing the relations between the components of language with the thought that speakers would not make these metalinguistic comments which threaten the methodology—unless the speakers were tricked into doing it by malicious linguists (which, it must be said, is simply not true).

To be sure, when we know a language well, we may find many borderline cases; what is usually considered a bound form may occasionally pop up as a free form, as -ism is in John Lennon’s “Give Peace a Chance” (“Everybody’s talking about bagism, shagism, dragism, madism, ragism, tagism, this-ism, that-ism, ism, ism, ism”) or, more recently, -ish. But we must bear in mind that Bloomfield was never bothered by unclear cases, and this was undoubtedly because he viewed his decisions about morphology to be part of this larger human practice of linguistic analysis: yes, rule in question); each of these was a taxeme. Bloomfield referred not to “rules of grammar” but to tagmemes (essentially what we call constructions today), each of which had a formal side, a set of taxemes, and a meaning side. The reader will see that the conceptual steps just taken in the text do not assign any special status to those things we call “words.”

The working linguist of the time was well aware of the emerging tensions. Stanley Newman wrote in 1948, [33, 24]

This paper highlights some of the changes that have taken place during the last ten or fifteen years, both in the climate of linguistics and in its techniques of analysis. In 1935 the strictly descriptive approach was a rather novel and rash way of treating a non-primitive language. During the war, however, a number of linguists were engaged in applying descriptive methods to many literate languages, with the result that significant contributions to the description of several of these languages have recently appeared. Today the descriptive approach is becoming more widely accepted and understood outside the circle of analytical linguists, who had previously confined their efforts to unwritten languages. ... Linguists today are working out a more rigorous logic for analyzing their problems and a more tightly organized method of stating their descriptive facts.”

Bloomfield’s examples were, “a girl in her teens, taking up all kinds of isms and ologies. [5, 180] We will see below that Martinet in 1950 offered “ish” as an example of a suffix that could stand as an entire utterance! [31]
there are unclear cases, and that is true of everything we do in life. Don’t let it ruin your day.\footnote{This is not meant to be simply a flip remark. Bloomfield devotes quite a number of pages to aspects of English word-structure which do not fit easily into the categories he has established. His view, I think, was that we as linguists are interested in such cases, and that even the best account will contain unclear cases: all grammars leak.}

Bloomfield would later be criticized for problems that this definition encounters, both problems that Bloomfield pointed out, and problems that he did not. To the extent that he preferred a linguistic account of morphology to be based on a clear account of morphemes (rather than being based on a clear account of words), he was less concerned with such problems for his definition of \textit{word}.

The upshot was that Bloomfield was confident that he could provide a reliable method of analysis in which the smallest unit was the morpheme, but he was not sure that he would be able to identify words with the same rigor and consistency. If speakers could be relied on to reject many individual morphemes as free-standing utterances, then we linguists could point to utterances that were behaviorally \textit{minimal}, but which were in many cases larger than individual morphemes. Those would be our \textit{words}. But there was no guarantee that speakers could be relied upon to behave this way.

\section*{2.1 Building up and breaking down}

In \textit{Language}, Bloomfield began not with the analysis of immediate constituents that I have just described, but rather with an analysis of phonemes, and with that to build on, he used phonemes to define morphemes: in this straightforward sense, he was building up, from phonemes to morphemes.

He first characterized morphemes as sequences of phonemes (161), but over the course of a few dozen pages (beginning on p. 179), he arrived at the conclusion that in many cases, morphemes are better characterized as sets of \textit{alternants}, where these alternants are typically sequences of phonemes. There was a sequence of papers in the 1940s and 1950s that took up this view, leading up to what I take to be the concluding paper, [29] Hockett (1961)—which in turn was perhaps superceded by Huddleston [30].

Bloomfield’s first definition of the morpheme was, “A morpheme can be described phonetically, since it consists of one or more phonemes.” (161) But he soon thereafter (p.209) noted that morphemes often have two or more \textit{alternants}, each one of which consists of sequences of phonemes: the plural suffix in English has three regular alternants (-z, -s, @z). At the very same moment, he made it clear that in many cases, there was a logical dependence between the form that the alternants took; one typically takes one form as the “starting-point,” and derives the others from it. Just so with morpheme alternants: they may be built out of a basic form (by deletion or vowel mutation), or they may not: it is the language’s choice.

In light of the fact that Bloomfield has been accused of inconsistency here, I would suggest the following interpretation. Bloomfield understood an \textit{alternant} is something like the price of a book in a bookstore. The price is like a morpheme, and the different prices a particular book has are like the morpheme’s alternants. On normal days, a particular hard-cover book might have a price of $29.95, and on sale days, it might have a different price. The sale price might be set in one of three different ways: it could be 70\% of the normal price, or some other simple function; it might be $19.95, because all hard-cover books take that price during the sale; or it might be some other arbitrary price ($14.95, say) because the owner assigned each book a separate sale price based on nothing at all. Each book has two alternant prices, and only in the first case is the sale alternant price derived from the regular price. An item that is never on sale is like a morpheme with only one alternant, while an item that goes on sale is like a morpheme with two alternants,
and we know that alternants are sometimes derived by simple rule of modification (truncation, say), sometimes by introducing a new element (several strong verbs have their rhymes replaced by *ought*), and sometimes by an unrelated, suppletive form.

3 Dynamic analysis

One of the principal elements that distinguishes American descriptivism of the 1940s and 1950s from the generative tradition that followed is the way in which *dynamic* analyses were viewed, accounts offered by linguists which use a metaphor of *change*, or of one linguistic form becoming another, in some synchronic sense. Bloomfield’s view from the 1930s remained the mainstream view for the decades that followed—but it was complicated, because he had a very ambivalent attitude about dynamic accounts; he could not live with dynamic metaphors, but he could not live without them, either. What he wrote about the stem forms in *knife*/*knive-s*, or *house*/*houz*es has been cited countless times. He wrote, “the final [consonant] of the underlying singular is replaced by [its voiced counterpart] before the [plural] bound form is added.” What exactly does “before” mean here? It means

...the alternant of the bound form is the one appropriate to the substituted sound; thus, the plural of *knife* adds not [-s], but [-z]; “first” the [-f] is replaced by [-v], and “then” the appropriate alternant [-z] is added. The terms “before, after, first, then” and so on, in such such statements, tell the *descriptive order*... [which is] a descriptive fiction and results simply from our method of describing the forms. (213)

And yet. The linguist cannot avoid this temporal description: “a complex word can be described only as though the various compoundings, affixations, modifications, and so on, were added *in a certain order* to the basic form.” (222) Failing to carefully observe the ordering of such processes would be a linguistic failing. (222) It is perfectly clear to the reader that Bloomfield was uncomfortable with such analyses. Still, if he felt that there was something illegitimate about a processual account of word formation, he acknowledged that such accounts were sometimes unavoidable, so do it right when you do it.

Bloomfield noted that in many languages one sees that the first set of processes applying to an underlying form are principles of word-formation (today’s derivational morphology), and the second set of such processes are inflectional (as in the word *actress-es*). Inflectional morphology deals with patterns that appear exceptionlessly (or nearly so) over the largest word classes of a language, forming paradigms, consisting of large numbers of sets of inflected forms. Underlying all of the forms of a paradigm we may be able to identify a single underlying form, the *stem* or *kernel*, with all the words of the paradigm derived from it, though that underlying form may never appear as such in a free standing form (such is the case in German, for example). (225)

Zellig Harris’s view of dynamic analyses was exactly the same as Bloomfield’s: we should avoid them at all costs, but sometimes they are inevitable and unavoidable. The importance of such analyses in Harris’s thinking was underscored by the influential paper that Rulon Wells published in 1949 on automatic alternations, addressing the advantages in certain cases of what would later come to be called derivations in phonology.\(^\text{10}\)

3.1 Hockett’s two models and the dynamic turn

Charles Hockett gave the clearest account of dynamic analyses in morphology in his “Two models of grammatical description,” (\[24\]) a paper which continues to be cited more than sixty years

\(^{10}\text{See [39]. I discuss this case in some detail in [13].}\)
after its publication. To the two models he presented he gave the names “Item and Arrangement” (IA) and “Item and Process” (IP). Curiously, he noted at the beginning of the published version of the article that after completing it, he realized that he had omitted a third model, the word and paradigm tradition, just as important as the two he looked at, and while “it will not do to shrug this frame of reference off with the comment that it is obviously insufficiently general,” that is just what he did, all the while offering “his apologies for not having worked such consideration of WP into the presented paper. However, lack of time prevented this, and the discussion as it stands may nevertheless be of some value.” (210). I think that it was a skepticism of the importance or centrality of the notion of the word that accounts for his slighting the WP perspective, but that must remain an opinion; I cannot prove it (though the reader will recall Hockett’s remarks that I mentioned earlier).

To explain “item and arrangement,” Hockett reached back to an observation of Harris’s a few years earlier:11 “The difference between two partially similar forms is frequently described . . . as a process which yields one form out of the other . . . This is a traditional manner of speaking, especially in American Indian grammar. It has, of course, nothing to do with historical change or process through time: it is merely process through the configuration, moving from one to another or larger part of the pattern.” We would be inclined to read “Sapirian” for “American Indian grammar,” except that Bloomfield’s “Menomini morphophonemics” [6] was written firmly in this tradition as well (and Bloomfield was no Sapirian). Hockett suggested this processual metaphor is a “carry-over” from historical linguistics, coming from Boas and confirmed by Sapir. “Grammars written largely under Sapir’s aegis, such as Newman’s Yokuts (1944) [32] . . . still stand as examples of IP in action.” (386) Item and arrangement, on the other hand, makes statement of where morphemes are along a one-dimensional axis—and while that axis is ultimately the axis of time, the linguist treats it as an axis of space, traced in a transcription.13

It was Hockett’s intent to leave the evaluation of the relative merits of IA and IP to the reader, but if we read only the beginning of the paper, it is easy to get the impression that he was skeptical about IA. He wrote, “if it be said that the English past-tense form baked is ‘formed’ from bake by a ‘process’ of ‘suffixation’, then no matter what disclaimer of historicity is made, it is impossible not to conclude that some kind of priority is being assigned to bake, as against either baked or the suffix. And if this priority is not historical, what is it? Supporters of IP have not answered that question satisfactorily.” (387) But the reader who gets to the end of the paper sees that Hockett’s aim was to argue that a dynamic analysis is fully in keeping with the central principles of linguistics as a formalizable science, just as much as IA. Perhaps he emphasized his understanding of the skepticism for IP early in the paper to be in a better rhetorical position at the end to propose and defend a rigorous account of IP.

In the space of about a page, he mapped out a formalization of dynamic linguistic analyses that he found perfectly rigorous, allowing for “one or more underlying forms” to be related to a “derived form” by “a process.” (396) Some of the phonic substance of the derived form may not be present in any of the underlying forms because they are “a representation or marker of [a] process.” He emphasized that a number of the problems that IA faced vanish from his formalization of IP, listing “empty root-alternants, portmanteau root-alternants,” as well as what we would call deletions.

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11[18, 199]. Harris 1944, p. 199.
12Rodney Huddleston wrote, “This is surely too vague and inexplicit to serve as a satisfactory interpretation for synchronic process.” [30, 336]. “Process” as used today in any model of descriptive grammar is simply a means of relating formally one word or form to another word or form by the most economical statement, and implies no sort of time dimension.” [35, 136].
13This treatment of time as space is illustrated every time we speak about where a word appears in a sentence, rather than when.
Our IP model differs, at least superficially, from anything to be found in the writings of Sapir... mainly this means the contrast between tactics and morphophonemics, which does not emerge at all clearly either in Sapir's writings or in Bloomfield’s 1933 discussion... All this would be easier to say and at the same time perhaps less necessary, had we abandoned the term “process” and simply imported “operation” from mathematics... (397).

Hockett was a bit hesitant as to whether his reformulation of processual analysis, inspired by certain mathematical ideas, was entirely adequate:

Psychologically, however, this replacement leaves something out. Relations seem static, whereas operations seem dynamic—seem to generate something which we perhaps did not know was there. One use of mathematical systems is computing; that is, in discovering implications that are not known, or not obvious, to the computer until the computation has been performed. Computing makes use of systems involving operations, not those characterized purely by relations, underscoring the importance of the dynamic or generative nature of operations. (395)

4 Constituent structure

The idea of successively dividing an utterance into a hierarchy of smaller and smaller units was perhaps the most important notion that Bloomfield developed in *Language*. The image that was used was sometimes a tree (that would be Chomsky’s customary visual metaphor), but more often a sequence of nested boxes. Bloomfield was very sensitive to the constituent structure of words. He noted that while *gentleman* was a compound, *gentlemanly* was not; it just so happens that in that word, the base to which the bound suffix *-ly* is attached is a compound, but the word itself is not (Bloomfield used the term *underlying form* for the base of a morphological complex when that base was itself a word). (209). The phonological characterization of an underlying form could be different from the observed form of that form when it stands freely; the underlying form of a German noun such as *Haus* [haus] “house” is [hauz], with a voiced final consonant which emerges when the plural *-er* is added (*Häuser* [hojzr] “houses”). In such cases, Bloomfield would refer to these as theoretical underlying forms. (237)

By the time of the post-war linguistic position that we are looking at, this view of the centrality of hierarchical structure was widely accepted, and it was generally felt that the same tools could be applied both to understand sentence structure and to understand word structure (that is, word-internal structure). But in retrospect we can see that the matter was not completely settled. Hockett, both in [24] and in [28], spends too much time explaining to the reader exactly why it would be wrong to treat utterances as mere sequences of words, when in fact a word can be decomposed into a sequence of embedded constituents; the effort that he put into it shows that his colleagues were still dubious about this position. Furthermore, in [27], he expresses great excitement about the recent probabilistic models that were inspired by Claude Shannon’s work on information theory. As Chomsky rightly responded in his review [7], those two views were (or at least at the time strongly appeared to be) incompatible. There did not appear to be a way to model word-generation probabilistically, with the preceding word or words conditioning the next, while maintaining constituent structure at the sentential level. It would take several decades before that was accomplished.

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14Blevins: “Although again inspired by the programmatic remarks in Bloomfield (1933), models of IC analysis were principally developed by Bloomfield’s successors, most actively in the decade between the publication of Wells (1947) [38] and the advent of transformational analyses in Harris (1957) and Chomsky (1957a).”

15See [14] and [15].
One of the most striking places in which Harris revealed his hand about the primacy of morphemes over words is in his paper “From morpheme to utterance.” [19] The purpose of the paper was to show that there is a good deal of structure to be found by looking at how a sequence such as “young boy” can appear in a set of environments (“where did the – go?”): he was exploring the hierarchical structure of language, but it was not the hierarchical structure of words; it was the hierarchical structure of sequences of morphemes, even though the larger context was sentential. He was preternaturally clear that it is sequences of morphemes he wishes to talk about, and totally silent on the absence of any talk about words!

Nida emphasized the hierarchical structure that emerges in a study of the morphology, and noted that the set of morphemes that appear before or after a root morpheme will often appear to divide into “well-defined structural layers…. The principal division is between derivational and inflectional formations.” [34, 98] The derivational formations may include compound formation in addition to affixation of affixes.

5 Method, methods, and theory

For today’s readers, one of the barriers to understanding the work of Zellig Harris (and to a lesser degree, Charles Hockett) is that we do not see clearly what they meant when they expressed their concern to develop and improve linguistic methodology. It would be prudent, therefore, to begin with a word of caution as we turn to the work of Zellig Harris. Harris’s central concern was to develop a clear set of methods that could be used to analyze language, but those methods always included tentative hypothesis formation, and Harris understood the importance of going back and rethinking an early part of the analysis in the light of what we learn later on, as we proceed in our study of a language.16 The purpose of the methods was to bring us to simple and compact statements about a language, and these methods could vary depending on three things: the very nature of the language being studied, the actual goals of the linguist, and in the final analysis, the scientific aesthetics of the linguist.17

In his major work, [20], he repeats this time and again. In his discussion of how we decide what sound sequences should be identified as morphemes (which he calls morphemic segments), he wrote,

We set up as morphemic segments only those tentatively independent phonemic sequences which have distributional similarity with other tentatively independent morphemic segments. That is, we determine our elements in such a way that it will be possible to make simple and compact statements about their distribution. The task of the present procedure is to offer techniques for finding which segmentations will yield such elements.

Harris often used the compact to characterize what he felt was the best analysis of a language.

16 There are myths that have somehow sprung up about his approach, some of which are diametrically opposed to what he actually wrote and believed, and some have suggested that Harris wanted to establish a unilinear method of discovery that allowed no such back and forthing. Only someone who had not read Harris could say such a thing! See [11].

17 Hockett shared some of these sentiments with Harris; in [24], he wrote, “Whether a grammatical description of a language is satisfactory or not depends in part of the use we what to make of it. Quite apart from esthetic or stylistic consideration, which can and do vary from one reader of grammars to another, and setting aside such matters as application to language pedagogy, there remains a number of properties which a grammatical description must have if it is to satisfy us for any scientific purpose…. Otherwise it must be prescriptive, not of course in the Fidditch sense, but in the sense that by following the statements one must be able to generate any number of utterances in the language, above and beyond those observed in advance by the analyst—new utterances most, if not all, of which will pass the test of casual acceptance by a native speaker.” (398)
would be, and compact results would be *convenient* ("convenient" or "convenience" appears 83 times, and "compact" 31 times, in [20]).

It is a misunderstanding to think that Harris’s goal was to construct a mechanical procedure that could be fixed, once and for all, and which would work well for any past or future language. What he actually said was that the goal of the linguist is to produce an explicit (and we might say, formalized) method that results in the particular analysis that s/he believes is correct. But the work of the linguist was to analyze the language, and to use his or her own creative juices to arrive at the correct analysis. This really should not be surprising, since it is what we all by and large believe today, and Harris’s work is a major factor in the construction of today’s view of linguistics. To repeat: on Harris’s view, the linguist’s activity as a grammar discoverer is an active and creative role, and what s/he produces in that way is a mechanical procedure (or, as we would more likely say today, a fully formalized description).\footnote{Blevins aptly observes [3]:}

To this sweeping generalization, there is an exception. There was indeed one place where Harris believed that he had discovered an automatic method for what we today call “grammar induction,” but even in this case, he included the caveat that this method would provide *tentative* hypotheses. He believed that he had devised an algorithm for discovering morpheme boundaries. If we have a large sample of a language, divided into utterances, Harris believed it was possible to look at how the successor frequency varies over the course of a word. “Given a sentence \( m \) phonemes long, for \( 1 \leq n \leq m \) we count after the first \( n \) phonemes of the sentence how many different \( n + 1 \)th phonemes ("successors") there are in the various sentence which begin with the same first \( n \) phonemes. If the successor count after the first \( n \) phonemes is greater both than that after the first \( n - 1 \) phonemes and than that after the first \( n + 1 \) phonemes of the sentence, we place a tentative morphological boundary after the \( n \)th phoneme of the given sentence.” This was proposed in [21], and repeated in a number of places, including the preface to the fourth edition of [20], from which that quotation comes. Hafer and Weiss [17] fleshed this suggestion out in over a dozen different ways, testing each on a sample of English, and the results were mixed at best.

[21] has spawned a large body of work within computational linguistics on the subject of unsupervised learning of morphology, that is, algorithms which can detect morpheme boundaries in a large sample of any language at all, with no input to the algorithm but words, or a large corpus, from the effectively unknown language. A recent review of this literature can be found in [16]; I have contributed to this discussion (see, for example, [10], [12]).

We should bear in mind, too, that Harris did not believe that there was a fixed order in which the data from a language should be analyzed, with no opportunity for a question posed early on during the analysis of the phonology to look ahead to structure that is uncovered when the morphology or syntax is being analyzed. Harris did suggest that the formal analysis of a language will indeed be viewed as a step-by-step procedure, and phonology may be analyzed before morphology, but he gave many examples in which analysis of morphology would correctly lead to a reconsideration of the phonological analysis and a revision of it (we will see an example just below).

\footnote{This shift in perspective led the transformationalists to misinterpret and even misrepresent the descriptivists, nowhere more than in criticisms of the search for mechanical discovery procedures. As in the case of the designation structuralist, the term ‘discovery procedure’ was never used by the descriptivists themselves, but was instead coined and applied by Chomsky, who regarded it as ‘very questionable that this goal is attainable in any interesting way’ [Syntactic Structures, p. 53] and suggested that by lowering our sights to the more modest goal of developing an evaluation procedure for grammars we can focus attention more clearly on really crucial problems of linguistic structure and we can arrive at more satisfying answers to them. ( [8, 53])}
Hockett made a similar point in his 1947 paper [23, 163]. He noted that the linguist has to take advantage of the low-hanging fruit, that is, to analyze those aspects of a language which are overtly structured; each language has aspects that are easy to learn, and others that are a good deal harder to learn. No one method will be appropriate for all languages in light of that simple fact. “It is therefore often convenient to make the division into morphemic segments first in the case of those utterances and parts of utterances in which the difference in adequacy among various alternative segmentations is extreme. The less obvious choices of segmentation can then be decided with the help of the classes of morphemic segments which have already been set up. Even then, new data may lead us to rescind some of our previous segmentation in favor of alternative ones which pattern better with the new data.”

Eugene Nida, whose work we will return to below, emphasized this point as well: “No part of a language can be adequately described without reference to all other parts,” he wrote in words prominently placed and italicized ( [34, 2]). This means, he wrote, “that the phonemics, morphology, and syntax of a language cannot be described without reference to each other.” A grammar is a whole in which each part can affect every other: “no part of a single language can be described adequately without reference to the other parts,” he wrote (p. 3).

Let us take just a moment to consider some of the places where Harris emphasized the importance of the simplicity of a linguistic analysis. The first illustrates what is today a truism: if there is an alternation between something phonological and nothing at all, and if what the something is is not predictable, then the simplest account puts the something in the underlying form. “[W]hen many phonemes... in one position ... alternate with zero in another... it is simpler to consider the various consonants or vowels as part of the various morphemic segments, the shorter... forms are then analyzed as consisting of two morphemic segments: the longer... morpheme plus a single omit-phonemic morpheme. (169, my emphasis.)

The terms ease and convenient played in Harris's prose the same role as compactness: they show the characteristics of an analysis that his methods are designed to achieve. He wrote in a summary of several arguments, “These new segments of utterances therefore include in their constitution some of the limitations of occurrence of the phonological segments; and their distribution (i.e., their privileges of occurrence) within long utterances can be more easily stated than that of the phonological elements.” (172)

Going backwards to modify a phonological account on the basis of a later morphological analysis is both fine and necessary, he pointed out. “The work of [section] 12 may then be considered as a first approximation, to be corrected whenever we wish to have a somewhat different segmentation as a basis for defining the more inclusive elements... There is no conflict in doing this, since both the criterion of 12.23 and the basis for any later correction would be identical: the setting up of morphemic segments in such a way that the simplest distributional statements can be made about them.” (172) “Segments which had not been phonemically assigned with the aid of junctures, may now be so treated if the knowledge of morpheme boundaries which we now have makes this desirable in cases where we had neglected to do it.” (175)

Just a few pages later, he explained to the reader two things: first, that they must develop a notion of convenience that is appropriate for developing grammars, and secondly, when developing a grammar, we find that going back and reformulating the phonology in the light of what has been learned of the morphology is the right thing to do. “Establishment in 12.2 of the boundaries between morphemic segments enables us therefore to decide where it is convenient to set up junctures. This may lead to some changes in the junctures of chapter 8 and in the assignment of segments to phonemes in 7-9. These changes in phonemization may be so designed as to make phonemically identical two morphemic segments which were phonemically different before the reassignment of segments.” (176, my emphasis)
6 Nida’s Morphology

The second edition of Nida’s influential textbook [34] was published in 1949, three years after its first. The book has a pedagogical style to it, with clear statements of general principles and problem sets to illustrate the concepts at play.19 It is throughout an account of morphemes: “morphology is the study of morphemes and their arrangements in forming words” is how the book opens, and it never strays from that view. Morphemes are put together in ways that resemble the ways that syntactic phrases are formed, and Nida emphasized from the start that it is not always easy to distinguish between the effects of morphology and those of syntax.20

There are 26 entries in the index under the rubric “morpheme,” while the word “word” has no heading in the index at all. In the important spot where Nida focused on the limits of morphology separating it from phonology and from syntax, Nida alludes to the word, but he finds no support there; in fact, after listing six phonological characteristics that can be used to establish a word (or rather, a “phonological word”), Nida mentions a six word sentence in French (il faut prendre deux cabines) which he suggests forms a single phonological word, thus warning the reader not to rely too heavily on help from phonology in figuring out what a word is in a language. His conclusion was clear: rely only on distributional criteria in determining the boundary between morphology and syntax. Do not figure out first what a word is in your language, and then rely on that to distinguish morphological structure from syntactic structure. You should rather figure out how each morpheme, or bound-together group of morphemes, is placed with respect to the others, and it is that system which will divide naturally into a morphology and a syntax. In the case of the gentive -s in English, as in the dog’s owner or the King of England’s hat, we need to determine whether this should be considered a suffix or a clitic. To call it a clitic is to put its principles of distribution into the grammar of the language, but Nida suggests that it is not a clitic, but rather a suffix—apparently because he finds that it can appear immediately after only a limited class of words (nouns, presumably). We infer that he could not say something like the hotel we stayed at’s check-out time, a structure that today is not too difficult to find attested on the internet (and which seems natural to me).

Nida shared with Harris and Hockett the Bloomfieldian concern for accurately analyzing constituent structure, and on a few occasions he draws tree structures, both for syntactic constructions and for morphology, as in Figure 1 from English, and Figure 2 from Yipunu. The latter example there (lit., ‘beginning of his signs’) is especially interesting; it resembles the case of the king of England’s hat, but it is more complex. The stem limba ‘sign’ is preceding by a class marker showing the inherent class of the root, and the following root andi ‘his’ agrees with that root, producing bilimba biandi ‘his sign’. The root baandu is preceding by a class marker (di) expressing its inherent class—and its complement (bilimba biandi) takes the noun class prefix (di) of the noun to which it is a complement.

This sentence appears to challenge our expectations of where we find the division between syntax and morphology: the second di- looks like a prefix, just like the first di, but if it is, how can it be part of a construction (or constituent) with a complex syntactic construction?

19Hockett, in a review in Language wrote: “The great merit of [this book] is that it does not simply tell; it teaches. Many other books, particularly Bloomfield’s Language and more recently Bloch and Trager’s Outline of Linguistic Analysis, tell how words are constructed and how one goes about discovering their structure; but anyone actually faced with the task of teaching would-be linguists how to do all this needs more than a statement, however clear, of the process—he needs problems and more problems to assign his students, so that they can learn by doing.” [22, 252]

20This difficulty is not the result of some obvious failing of the approaches taken; the idea that syntax provides an important part of the questions posed by morphologist is shared by many approaches, including Syntactic Structures, generative semantics, and distributed morphology.
The problem is that *bilimba biandi* is quite evidently a syntactic construction; Bantu languages do not have nominal compounds with internal repetition of class prefixes. But what is the relationship of *di*, then, to what follows it (*baandu* once, and *bilimba biandi* once)? Nida expresses the strong belief that the both *di* and *bi* are prefixes to what follows them, but he recognizes that there is a difference between the *local* relationship (which is prefixal) and the global relationship (which is syntactic—though he does not use the terms “local” and “global”).

The contemporary reader is struck by Nida’s take on the problem. The problem is in what part of the grammar the place of the second *di-* will appear, but in putting the issue that way, Nida meant this in the very concrete sense of which *chapter* of the grammar that it will be when we write it all up. The linguist today passes almost without thinking about it from a concern with the elegance or the simplicity of a particular analysis to a statement about the grammar of the language being studied—not the grammar- *book*, but rather the abstract grammar that speakers know and that written grammars attempt to approximate.

In any event, Nida appears to prefer to restrict the word *word* to its traditional and everyday sense: a maximal string of letters in a text that does not contain a space, and that notion is not one that merits playing an important role in his analysis, even if making decisions about wordhood will loom large for people who are developing an orthography for the first time for a language. As with Bloomfield, Harris, and Hockett, he did not come out and say that he would rather not have to worry about what a word is, but he wrote this: “The term ‘word’ cannot be conveniently used as an equivalent of ‘morphological structure,’ for it has too many other traditional associations.” (105) The forewarned reader will recognize that the word “traditional” here is a allusion to a concept that will eventually have to be jettisoned from scientific linguistics. “Traditional” was not a good thing for a concept to be in Bloomfieldian circles. He had also written, “It is by no means so easy to determine the point at which the morphology of a language divides from the syntax, for there is constant overlapping, especially in such languages as Bantu.” (102)

Nida included dynamic or processual views of morphology, following in this regard both Bloomfield and Hockett. “In order to explain in a measure the relationships of such phonological differences, the changes which take place have been spoken of in terms of processes. This is perhaps the easiest and most practical manner in which we can discuss them.” (21) A few pages later, he reiterated this, writing “it is sometimes helpful to select a single form as phonologically basic, i.e. one from which the other allomorphs may be phonological ‘derived.’” (45). The case of the English plural suffix is given as an example of this, where a basic form /-az/ is established, largely on the grounds that deletion is simpler process to describe than is insertion. The replacement of one phoneme by another may constitute a morpheme as such, as in the case of /f/ becoming /v/ in *wives*, and Nida created a notation for this, reminiscent of Harris’s: /v ← f/. The word *feet*, Nida suggested, was composed of three distinct morphemes: the stem *foot*, the dynamic replacement / iy ← U /, and a null suffix representing plural number (this third morpheme is just like in the plural of *sheep*).

Nida explained to the student that it can be very difficult to find the correct constituent structure of a word in a language, especially if one does not know the language well—but even for one’s own native language. Although he does not cite Rulon Wells, it is perfectly clear that his reason for saying this derives from the argument that Wells made in 1947 in his classic paper on constituent structure. Wells had argued that there are no direct algorithms that take strings as input and produce the correct immediate constituency, but rather what we have are methods for deciding between two given analysis, which one is better. [38]
Nida also suggested that complex nuclei should be understood as having a kind of autonomous existence—what we today might call a lexical entry. He gave as an example the stem \textit{catastroph}, which is internally composed of two morphemes and which can appear with two different suffixes (\textit{catastrophe} and \textit{catastrophic}). He suggests that the stress pattern in the two cases suggests that the bimorphemic stem \textit{catastroph-} appears as a unit (i.e., a morpheme) with two allomorphs, corresponding to the two different stress patterns. (p. 122)

7 Morphophonemes: morphology and phonology

Let us make a few closing remarks about morphophonology in the descriptivist period. The morphophoneme is an theoretical item in the structuralist’s model that is conceptually similar to the phoneme, but with few constraints imposed on how similar to the surface inventory of sounds each morphophoneme might need to be (unlike the phoneme). Many relationships between sounds in a language cannot be captured by reference to phonemes, for different sorts of reasons. In some cases, it may be that only a phoneme in a particular set of morphemes engages in the process, or it may be that the conditioning factor of the change is part of an underlying form but is not present on the surface. In these and other cases, morphophonemes were added to the model.

The \textit{morphophoneme} played an important role in the analyses of Harris, Hockett, and Nida, but the word is not found anywhere in Bloomfield’s \textit{Language}. However, Bloomfield’s last important paper, “Menomini morphophonemics,” published just a few years after the book, was entirely devoted to the behavior of morphophonemes, and curiously, this paper gives no indication of where the term or the concept might have come from. The paper itself appeared in a volume from Prague published to honor the memory of Nicolai Trubetzkoy, and Trubetzkoy had spent much of his career exploring the concept of the morphophoneme (also known as the morphoneme). If he were here, Bloomfield might quite rightly tell us that the readers of that volume had no need at all for an explanation of the term. Trubetzkoy had written (in [36] reprinted in [37]), “by morphophonology or morphonology we mean... the study of the use of phonological means by the morphology.”

For Harris, the reader can easily get the impression that the morphophonology, the place where the morphophonemes were described, was where the real action was, even more than in the phonology. We can see the difference between Bloomfield and Harris in the way they treat the difference between the plural of \textit{cliff} (\textit{cliffs}) and the plural of \textit{wife} (\textit{wives}). Bloomfield wrote this:

\textit{We can describe the peculiarity of these plurals by saying that the final \{f,θ, s\} of...}  

\textsuperscript{21}Trubetzkoy did not have a high regard for most of his colleagues. The sentence just cited is the first sentence of the paper, which continues as a diatribe against the lack of imagination he perceived among his colleagues and immediate predecessors: “Morphonology has been in Europe the most neglected component of the grammar. If we compare the teachings of the Hebrew, Arabic, and especially Indian grammarians, what is most striking is the defective way that classical and medieval Europeans have understood the problems of morphonology. But even in the modern period this state of affairs has hardly changed. The modern Semiticist has simply accepted the morphonological doctrines of the Arabic and Hebrew without adapting them to a modern scientific point of view. Indo-Europeanists accept the morphonological teachings of the Indians as the basis of a morphonology of the common Indo-European language, they solidly build this morphonology and what comes from this is what is called the system of Indo-European derivation and the whole doctrine of roots and suffixes in Indo-European. But if we consider the results of modern comparative grammar of the Indo-European languages, we see that they simple fail to see the real essence of morphonology: roots (or bases) and suffixes take on a metaphysical character, and apophony becomes some sort of magic operation; there is no link made with a living language. Theories of roots and [vowel- or consonant-modifications] seem to be possible and necessary only in a hypothetical proto-language: in the historically attested languages there are only remnants and they have been so modified by later developments that there is no longer any sort of a system to be found.” [37, 337-38], my translation.

15
the underlying singular is replaced by \([v, D, z]\) before the bound form \([\text{the suffix}]\) is added.

Harris, in contrast, proposed a morphophoneme \(F\) in \(wife\), which was realized either as the phoneme /\(l/\) or the phoneme /\(v/\) (depending on the presence of the plural suffix), while \(cliff\) contains a morphophoneme which is always realized as the phoneme /\(l/\). Three morphophonemes thus are realized as contextual combinations of the set of two phonemes.

Chapter 8 of Harris’s *Methods* [20] is quite surprising to a reader today, because while it describes itself as being concerned with boundary elements (as we would say today; Harris calls them junctures), it is really about abstract phonological analyses which become available once one has produced a morphological analysis. The point of the discussion was to show that a great deal of formal simplification can be accomplished with the addition of a small amount of abstraction.

Harris’ example was the relationship of the vowels /\(ay/\) (as in \(minus\)) and /\(Ay/\) (\(sly, slyness\)). Given the pair \(minus/slyness\), the two phones seem to be in contrast, and Harris cited a similar case for /\(ey/\) and /\(Ey/\) (which appears to no longer exist in American English). But /\(Ay/\)’s environment is so restricted—it appears primarily at the end of utterances, plus in a few other words—that it seemed inappropriate to set it up as a separate phoneme, even though the leading principles laid out so far demand that this be done.

Harris proposed that this is a fine place to posit an abstract element (which he indicates this way: /\(-/\)), and it will appear in words such as \(sly-ness\). This abstract element is motivated by three considerations: we may be able to reduce the set of phonemes by doing so.\(^{22}\) The abstract element may account for other, quite separate phenomena. In the case at hand, Harris identifies this boundary element with one that would be posited in compound nouns, such as \(night-rate\) (whose pronunciation is quite different from that of \(nitrate\)); the allophones of the final sound of \(night\) in \(night-rate\) are quite different from the single phone possible in \(nitrate\), and this difference can be described by positing a /\(-/\) juncture in \(night-rate\). Harris also argued that the /\(-/\) juncture coincides with a position of possible pause. Harris also suggests (p. 82) that this juncture element can be used to replace the notion of syllable; instead of saying that a segment isthe first segment of a syllable, we can say that it is preceded by a /\(-/\) juncture.

It is clear that Harris realized he was on to a new method, with this postulation of boundaries. He wrote, “by the setting up of the junctures, segments which had previously contrasted may now be associated together into one phoneme, since they are complementary in respect to the juncture.” (p. 86) Of course this flies in the face of phonemicist methodology; of course any contrast can now be accounted for without positing a new phoneme by positing a juncture that “triggers” a condition that the phoneme is realized in a special way when in the context of this boundary. So what does Harris do? Of course he tells his reader that he is doing nothing new!

Although the explicit use of junctures is relatively recent, the fundamental technique is involved in such traditional linguistic considerations as “word-final”, “syllabification”, and the use of space between written words.

Maybe so; but many phonologists were unhappy about allowing phoneme realization rules to be sensitive to contexts like “word-final” for precisely this reason [quote from Hockett here]. Now Harris does something curious: he tells us what a linguist does:

When a linguist sets up the phonemes of a language, he does not stop at the complementary elements of Chapter 7 [that is, traditional phonemic analysis, JG], but coalesces sets of these complementary elements by using considerations of juncture.

\(^{22}\)In the case at hand, while we introduce /\(-/\), Harris suggests we can get rid of two phonemes, /\(A/\) and /\(E/\), whereas American English of today may have only one sound, /\(A/\), which can be gotten rid of here.
They do—if they are Zellig Harris. In fact, Harris went on to point out that in order to get English right, we need to postulate two (abstract) boundary elements, one which he notes as “#” and the other as “-”. The first appears between words, while the second appears inside certain words, like *slyness*, where the stem *sly* is longer than a syllable in a monomorphemic word like *minus* would be.

What’s going on here? It certainly looks like Harris is encouraging the phonologists to postulate boundary symbols in order to simplify the phonology—boundary symbols that are essentially the reflection of morphological structure. (What has happened to morphology-less phonology?) What did Harris say? That’s right, he said:

> The great importance of junctures lies in the fact that they can be so placed as to indicate various morphological boundaries. (87)

If a language has predictable penultimate stress, for example—like Swahili—then we can eliminate stress as an element of the phonemic representation just as long as we include word boundaries between the words. (87) In fact, Harris goes on to point out that the phonologist would be wise to restrict his use of boundary symbols to cases where they really do mark morpheme boundaries. German presents an interesting case: the phonologist knows that word-final obstruents are devoiced in German, and so he might want to remove the voiceless obstruents from the phonemic inventory, replacing everywhere a /t/, for example, by /d#/; but this would have the unfortunate consequence of requiring us to place #’s in all sorts of places that are not at all morpheme boundaries, like right after a word-initial consonant: *Teil* ‘part’ would be /d#ayl/; and this would not correlate with morphological boundaries.

In English, Harris notes, every case where a /-/ boundary is needed, it corresponds to a morpheme boundary (as in *slyness*, for example), but the converse does not hold: not every morpheme boundary corresponds phonemically to a /-/: Harris says *playful* does not have a /-/ boundary, but *trayfull* does—purely on descriptive grounds.

Harris is quite clear (p. 88) that phonemic analysis should certainly take morphemic analysis into account when the data of the language suggest that this be done: phonological analysis can be simplified by positing phonological boundary elements which typically correspond to morphological boundaries:

> The agreement [between the needs of the phonemic analysis and the boundaries motivated by morphology] is, furthermore, due in part to the partial dependence between phonemes and morphemes.

And the phonologists just may have to guess where the morpheme boundaries, by seeing how this simplifies the phonological analysis:

> In much linguistic practice, where phonemes are tentatively set up while preliminary guesses are being made as to morphemes, tentative junctures may be defined not on the basis of any knowledge that particular morphemes are worth uniting... but only on the basis of suspicions as to where morpheme boundaries lie in given utterances. (89)

To summarize, then, in contemporary terms: the phonologist may posit abstract boundary symbols—any number of them—in his phonology, if he suspects that a morphological analysis will find motivation for them. No one could read this carefully and interpret this method as one in which phonemic analysis precedes morphological analysis!

Harris turned next to another way to lead to a simpler phonological analysis—not by positing abstract elements of a sort that are never pronounced, but by analyzing a phonetic sound as
being the realization of two distinct phonemes, one preceding the other (though Harris points out that really this is a generalization of the abstract boundary case (96)). Harris refers to this as rephonemicization, and its purpose, and its goal, is two-fold: it allows us to reduce the size of the underlying phoneme inventory, and it eliminates (or simplifies) conditions on what sequences of phonemes are permitting in phonemic representations. (22) Harris offers the example of the nasalized flap in some American pronunciations of *painting*, which can be reanalyzed phonemically as a nasal followed by a */t/.

True to his methodological principles, he does not insist that one must perform this kind of analysis. Many linguists are doing this. Harris remarked: “The current development of linguistic work is in part in this direction” (94). But don’t feel obliged to do so: “any degree of reduction and any type of simplification merely yields a different, and in the last analysis is equivalent, phonemic representation which may be more or less suited to particular purposes.” (94). Still, this method can be very useful; one of Harris’s examples concerns reanalysis of */s/ as */sy/*, which does not lead to a simplification of the phonemic analysis, but definitely simplifies the morphological analysis, since it allows us to have a single representation for the morpheme *admiss* in *admissible* (with */s/*) and *admission* (with */$/). Where do things stand, then, with allowing morphological considerations to influence the phonemic analysis? The answer is essentially this: use morphological information in developing a phonemic analysis, unless that would have a clearly undesirable effect on the phonology. In Harris’ words (p. 111):

If two segments having different environments (i.e., non-contrasting) occurs in two morphemic segments which we would later wish to consider are variants of the same morpheme in different environments, we will group the two segments into one phoneme . . .

That’s clear: design your phonology in order to simplify the morphology. But the sentence continues:

. . . provided this does not otherwise complicate our general phonemic statement.

Ah.

Our assignments of segments to phonemes should, if possible, be made on the basis of [purely phonemic criteria], since [this particular principle] introduces considerations drawn from a later level of analysis.

So we cannot walk away from this saying that things are crystal clear, from a methodological point of view. This seems like a fair summary: use purely phonological criteria to come up with the smallest inventory of phonemes and the fewest constraints on distribution of phonemes. When it is possible to simplify the morphology by relatively modest modifications of the phonemic inventory, feel free to do so—Harris certainly would do so himself. But don’t feel obliged to, if you don’t want to.

The upshot of all this is that Harris was considering large-scale reconsiderations of what aspects of the sound pattern of a language could be treated as part of the phonology, and what as part of the morphophonology. We are still living and working in the wake of his suggestions.

8 Criticism

André Martinet was perhaps the most influential French linguist of his generation, and he was in a position to be skeptical of the American infatuation with morphemes. In a review of Nida’s book
he summarized the approach as “the analysis into morphemes of the larger units traditionally called words...whether [this] approach...is, in all cases and for all purposes, preferable to the traditional presentation of grammatical paradigms is a problem to which we shall revert later.”

Later in the review, he says that some linguists (by which he seems to mean the mainstream LSA linguist) adhere strictly to the “recently developed method of morphematic analysis.” (86). What is so wrong, he asked, with methods that do not focus on morphemes? After all, “for some millennia, people have been describing languages with some measure of success, and that there even exists a word, namely ‘grammar’, to designate this scholarly activity.” And even if there is something right about analysis into morphemes, “this does not necessarily mean that our predecessors were hopelessly groping in the dark, and that all they wrote on grammatical subjects is to be disdainfully cast aside.” It is striking that Martinet found Nida’s approach a strong rejection of his own intellectual tradition; I referred earlier to a dismissal of traditional morphological views to be found, if we scratch hard enough, in the writing of the Bloomfieldians.

He noted that Nida’s Bloomfieldian definition of the morpheme is “practically meaningless” when taken out of context: “a linguistic form which bears no partial phonetic-semantic resemblance to any other form.” Martinet pointed out that lumping allomorphs into morphemes was not Bloomfield’s concern, but rather analyzing utterances into morphemes was. Nida, said Martinet, is more concerned with glomming morphs together, which means we never get a real definition of morpheme.

Definition or no, the examples given by Nida provided a good deal of insight to the reader. But the question of what is a bound and what is a free form requires more care than Nida gave it, as Martinet wrote. Martinet suggested that Nida simply refers (and defers) to Bloomfield as the authority, and accepts the definition uncritically; Martinet says that Nida shares with “so many scholars” a blind acceptance of Bloomfield’s view. Nida says a is a free form: is there ever a situation where a would constitute a reasonable utterance (one where by would not also appear)? Surely not; so maybe the condition that a word “forms [or can form] a single utterance” is too strict a criterion of wordhood. Or maybe it is too loose a criterion: “If I ask ‘yellow?’ and get ‘-ish’ as an answer, am I to pretend I do not understand, or shall I list -ish among free forms?” (85). Martinet says that everyone knows this, and Bloomfield’s strict definition “is practically ignored by everybody,” and Nida even gave his own work-arounds for the cases where Bloomfield’s strict approach simply fails. In the end, “the analysis of word analysis to English is apt to lead to endless and barren discussions, as when it comes to analyzing such a simple form as sang. We probably comes much closer to any kind of linguistic reality if we just follow the traditional practice of presenting sang as the preterit of sing without trying to split hairs about it.”

9 Conclusion

We have looked primarily at aspects of discriptivist morphology that are most visible from a high altitude, and not looked at matters of detail which can easily be gleaned from a reading of the original publications. There are few subjects that we discuss in morphology today that were not raised by this generation of linguists working on morphology, but the topic that is covered the least is the theory of the paradigm, conceptually dependent on a clear understanding of the notion of the word.

Central to the practice of morphologists was the reading and the writing of morphologies, where a morphology is an article or a book, something made out of paper, not an abstract theoretical item. Grammars, in turn, have a structure that reflects the structure of the language being described; it would not be a good thing to discover that the grammars of all of the languages
of the world turned out to have the same structure, since it is perfectly clear that language do, indeed, differ. Many linguists today, bred in modern universalism, would find that difficult to imagine that perspective.
peasants throughout China work very hard

Figure 1: Syntactic structure
Figure 2: Punu
my necessity of loving them reciprocally

Figure 3: Totonac
References


