

A Note on the Genealogy of Research Traditions

in Modern Phonology

John Goldsmith

The University of Chicago

1. Introduction

This brief note is concerned with the notions of genealogy and continuity in linguistic research.¹ Our natural methods of work require of us some beliefs about the origins of our intellectual tools, and these beliefs play an active role in the unfolding of our field's progress. In short, these beliefs matter, and they matter to all of us. Furthermore, any insights to be gained in this area are likely to have a salutary effect on our profession. For these remarks, I will focus on the area of African language phonology, and its relationship to phonological theory. Many other choices could have been made, and thus to some extent the choice is arbitrary; but it can hardly escape even the casual observer of the current phonological scene that it stands in profound debt to work on African languages. In a sense, our task is to elucidate what such a statement of intellectual debt consists in.

It would be disingenuous to press too far the arbitrariness of the choice of African language phonology, for part of the choice rests on the personal, working experience of this writer. The choice is a reasonable one in other, less subjective ways: African linguistics is a particularly unified field, experiencing remarkably little in the way of schisms based on the language or country of the investigators, or the theoretical background of the researcher. There is some of this, to be sure, but conferences and publications continue to show a thorough integration of workers in North America, Africa, and Europe.

It is by no means a straightforward task, in many cases, to distinguish phonological theory and work on African language phonology. To some degree, the difference between the two -- or more generally, phonological work in an areal subdiscipline -- lies in the eye of the beholder. What may strike one reader today as a highly theoretical work may seem in forty years' time to be hardly theoretical at all, perhaps no more than a passing description of some facts, while another analysis -- ostensibly a simple account of some observations -- may be seen decades after the fact to be heavy-laden with new and original perspectives going well beyond the immediate subject matter of the paper.

A part -- a large part -- of the reason we may have so much difficulty in determining whether a particular work is a contribution to theory or to African linguistics derives from our unanalyzed assumptions regarding what the difference between linguistic theory and a descriptive/ historical field such as African linguistics is. It is difficult

for most of us, I daresay, to remove ourselves from what we may call the "data versus analysis" myth: the myth that holds that there is in principle, or in practice, a line that can be drawn between linguistic *description*, which focuses on work with informants, and linguistic *analysis*, which consists of two parts: first, producing analyses of the data that have come from the informants, and second, producing and testing theoretical models which bear on the analyses of the data that the field-workers have so graciously provided us with; meanwhile, the theoretical models may bear on analyses by encouraging, discouraging, or even eliminating various such analyses.

The data vs analysis myth encourages a particular view of what the relation must be between linguistic theory and African linguistics: African linguistics must be primarily data-collection, and linguistic theory must be primarily analysis-production. If we start with assumptions such as these, then we may end up with surprising conclusions, such as "how theoretical African linguistics has become in the last ten years," or "African linguistics is certainly making a major contribution to linguistic theory these days". Now, we do hear such things, and not infrequently (underscoring the sway of this myth); and while there is a good deal of truth to such statements, and while the self-congratulatory back-patting that such statements lead to may well be in some measure justified, I would like to offer a different perspective on the relation of linguistic theory to African linguistics, which has as its central theme the following idea: that one of the functions of linguistic theories is to establish professional affiliations and distances. Thus, while linguists working within a single theoretical framework may make serious efforts to remain knowledgeable about the work of their colleagues within the same framework, this effort is often counterbalanced by an unspoken sense that work which is not within one's own framework falls beyond one's immediate responsibility.

Theory, in such a way, can have the definite effect of fragmenting the field. A professional group such as constitutes the field of African linguists serves the opposite function: it serves to unite, over space and over time, the work of linguists in highly divergent theoretical frameworks. We may thus offer the following proposition: no historian of modern linguistics can understand the continuities in our field without tracing them through fields such as African linguistics, for that is where the important ideas of our times live, prosper, and remain fertile, often despite the Balkanizing effects of linguistic theory.

My goal, then, is to illustrate this perspective with a limited case study, the relationship between Firthian prosodic phonology and current theories of autosegmental and metrical phonology. I will suggest that the only way to make sense of the historical facts of the matter is to understand the competing and conflicting business of linguistic theory, on the one hand, and African descriptive linguistics, on the other.

Several of my colleagues have expressed puzzlement or dismay at my use of the term "*function*" with regard to the role of linguistic theory in the larger context of the profession, rather than some milder term, such as *effect*. They have raised the question as to whether I am not therefore endorsing a thorough-going sociological -- and perhaps to that extent, non-rational -- view of linguistic science. We must, I think, remind ourselves that science, like language itself or any other human field of endeavor, is a gridwork of motives subject to many simultaneous levels of analysis, none of which replace the other. A phonological account of a language does not, generally speaking, replace a syntax or a morphology; the one supplements the other. In certain notorious areas, these familiar components of the grammar can begin to impinge on each other, and affect their individual autonomies; so too for the levels of analysis of our field, as I indicate in the text. In linguistics, though, we may go so far as to draw normative conclusions as to how why prefer our field to operate, and I will do just that below, and suggest how some quite human and natural functions might just as well be less noticeably represented in our professional matrix.

2. Firthian phonology

The British linguist J.R. Firth established a way of thinking about phonological problems which is today generally referred to as "Firthian phonology" or "prosodic phonology", or as "the London School". As Hill 1966 wrote, "Prosodic Analysis made its effective debut with J.R. Firth's 'Sounds and Prosodies' in 1948 -- effective, in the sense that from this point on there has been a continuous flow of published work from linguists practicing it." (223) As this dating suggests, Firthian developments were contemporaneous with similar developments in the United States of the sort discussed in Zellig Harris' work on long and simultaneous components (Harris 1944), Charles Hockett's developments of this (Hockett 1947), and Bernard Bloch's work as well (Bloch 1948). I will not discuss this American development here, in part because I have discussed it elsewhere (Goldsmith 1976). Firth's work was also roughly contemporaneous with much of the work in phonological theory by Kenneth Pike, though Pike's work continued after Firth's own ended; for a practical summary of Pike's work in the area of African linguistics (covered virtually not at all in his well-known Tone Languages 1948) see Pike 1966.

The concerns that are central to papers written within the Firthian tradition in the 1940s, 1950s, and 1960s are much more in tune with the current spirit of theoretical concerns than are those of the bulk of papers written in other theoretical frameworks of the time.²

Firth's approach to phonological analysis began with a division of the sound features of a given language into phonematic units and prosodies. The phonematic units we might think of as corresponding to the elements of a

skeletal tier in autosegmental terms, though typically they would have some phonological substance. Another useful analogy would be to equate Firth's phonematic units to a melody tier in an autosegmental model, a tier which was distinguished for only consonant and vowel features, as in, for example, McCarthy's work on Arabic (McCarthy 1979). Firth did see these phonematic units as being the core, irreducible point-like units of phonological analysis; prosodies used them to spread over. Firthian analysis also includes a kind of prosody that consists of C and V patterns, as when a particular grammatical pattern is always expressed with a CVCCVC pattern, which would be a Firthian prosody. Prosodies more generally correspond to autosegmentalized features, as well as to metrical structure, such as syllable, foot, and grid structure.

The notion of phonematic unit was not an easy one, it would seem, for American linguists to grasp, and indeed, little or no use was made of such notions in the North American context; Gleason³ has recently written about this, noting that from the point of view of American structuralism, it was only natural to interpret the word "phonematic" as an idiosyncratic variant of "phonemic", which was not at all what Firth meant; but American linguists were accustomed to Joshua Whatmough's inveighing against the word "phonemic", which he thought should be "phonematic" on purely etymological grounds. In short, Americans were equipped to misunderstand some of Firth's terminological decisions.

Now, to understand any linguistic movement, we must understand what it is a reaction against, of course; to understand phonemics, we must understand that it was in part a reaction to the deluge of irrelevant phonetic information that phoneticians were immersed in (see R.H. Robins' remarks, in Robins 1970, pp. 170-71, 210-13); to understand prosodic phonology, we must recognize that it was in part a reaction to phonemics, whose concern for determining what was phonologically contrastive within the segmentable speech signal was so thorough-going that it left little or no room for considerations of higher-level phonological structure. A phonemic analysis requires that phonetic information be sorted into the contrastive and the non-contrastive, and requires that the phonologically non-contrastive not be represented on the phonemic level. Firth saw that the move of eliminating all of the phonologically predictable material frequently made it impossible to draw the generalizations that involved higher level structure, such as that brought in with considerations of syllable structure or vowel harmony. Thus Firth was more interested in determining the broader sound patterns of a language than he was in developing a model or a notation in which all and only contrastive information would be represented. To put it another way, the phonemicists' move to eliminate redundant phonetic information was eventually viewed by the phonemicists themselves as a goal in itself, while for a Firthian such a step was a reasonable one, but only as a means to a higher

end, the determination of the larger phonological pattern of the language.⁴

As Robins has observed, the phonemicists' emphasis on matters of contrast placed the focus on *paradigmatic* questions, and Firth, like the phonologists of the 1980s, was equally concerned with (if not more concerned with) questions of *syntagmatic* relations in phonology. Paradigmatic questions would naturally focus on issues of inventory, and in particular on inventory of sounds (rather than, say, inventories of syllable types or word-level tone melodies). Phonologists today have by no means lost this concern of the structuralists, of course; the renewed interest in the underspecification of features that plays a major role in discussions of both lexical and autosegmental phonology is the direct descendant of this issue. Any version of lexical phonology includes the premise that a rule of 'allophony' -- as a structuralist would have put it -- introducing non-contrastive phonetic differences -- may not precede a rule sensitive to word-level morphological considerations. Within the African context, we can find cases that illustrate difficulties for that position, appealing though it is in general; for example, in KiRundi, the rule weakening voiceless stops to breathy aspiration (i.e., an /h/) after a nasal is an 'allophonic' post-lexical rule; however, it bleeds (i.e., blocks from applying) a well-known rule of Bantu lexical phonology, Dahl's Rule, which in KiRundi voices an obstruent in a morpheme that immediately precedes a noun or verb stem. Thus Dahl's Rule applies in the negative subordinate (present tense) in changing u ta tem a to u da tem a ('that you not cut') but it fails to apply in n-ta-tem-a) where instead of voicing, the form ta undergoes the post-nasal softening, becoming [n hi tem a].

Returning to the Firthian school, central to their concerns were phonological 'features' that spread over such units as the syllable and the word. Of these, clear cases that could be handled directed were vowel harmony, nasal harmony, and certain other harmonies of this sort. (The interested reader may consult various references in Bazell 1966, Langendoen 1968, and Palmer 1970).

2.1 Tone

But perhaps surprisingly, the Firthian treatment of tone (at least in the African context) was a good deal less insightful than its treatment of other prosodic effects, and I think that one of the reasons for this was that tone is not just like vowel harmony; it is not just something that spreads over a large domain in a homogeneous fashion. The Firthian approach encouraged noticing respects in which a tone pattern was a property of an entire word, and in the case of African languages, this was an important step toward the correct analysis, a step which permitted a correlation to be established between grammatical and lexical dimensions and the tone melody of the word abstracted away from the syllable template. But tone is not like nasalization, even when nasalization is as

grammaticized as Bendor-Samuel showed that it is in Terena, where the first-person singular is marked by a prosody of nasalization (see Bendor-Samuel 1960). For in tone systems, it is necessary to come to grips with a kind of internal segmentation within the tonal melody or envelope. As we have come to see in the last ten or fifteen years, this autonomous segmentation of tone, and other prosodic levels, is an important characteristic of African tone systems, and autosegmental analyses specifically differ from their Firthian counterparts in insisting on segmentation of a uniform sort on each tier. Indeed, this is the central idea of autosegmental phonology: that the effects impressionistically called "suprasegmental" are still just as "segmental" as anything else, in the sense that they consist of linear sequences of more basic units which can be treated analytically.

But that kind of segmentation of prosodies has been quite foreign in spirit to prosodic analysis, I think it is fair to say; indeed, it was Firth's antipathy, hostility, and mistrust of the segmentation that had led to traditional phonemic segmentation in the first place that brought him to the postulation of prosodies. This difference between the conception of autosegments and that of prosodies is one of the most important and distinctive. The end result was that Firthian tonal analysis was practical and insightful when applied to the treatment of tone languages with short words (such as many Asian languages) (Sprigg 1955, Scott 1956, e.g.), but of more limited practical and theoretical success when applied to the analysis of African tone languages, where the domain across which tones may be mapped, and may interact, is frequently much larger -- as is certainly the case in the Bantu languages, as well as in Igbo and a number of other West African languages.

2.2 Degree of Specification

Firthian analysis addressed a question that is very much with us today, that of the number of "values" that are specified for a given feature. In a general essay on prosodic analysis by Hill 1966 published in the collection dedicated to Firth after his death, Hill writes:

...there is nothing about the incidence of frontness and backness in the native Turkish word that would lead us to treat either one as the marked member of an opposition. The case of roundedness, however, is different: we can state a rule for its occurrence in the word, but there is no complementary rule, of the same order of simplicity, for the occurrence of spreadness....To illustrate the point further, we may take verbal tone in Nyanja [here the writer bases himself on his own work]. In Nyanja words....each syllable has a high or low tone: there are virtually no restrictions on sequences, except that final low-high does not occur...our natural inclination [would] be to treat high/low as a pair of equipollent alternant features. However, each Nyanja

verb tense has a characteristic tone pattern. If we examine its operation with verb stems containing varying numbers of syllables, we shall see that the tense tone pattern is a set of high tones: so many syllables must have them, the rest are unmarked, therefore low.

This discussion is by no means isolated in the Firthian literature, and we see that the nature of specification -- whether something akin to features should be monovalent (or privative), as Hill suggests, or bivalent (or equipollent) is an important question, one which still remains unresolved in its entirety. Without reading too much into this passage, I think that one gets a sense that the issue is even more alive as a matter of the active architecture of the grammar, writing within a Firthian context, than the question would be for Trubetzkoy, for Hill does not simply want to conclude whether the feature is monovalent or bivalent -- that is, privative or equipollent -- he wants us to understand that this decision has further consequences with regard to other principles down the line that appear in our grammar.

2.3 Quantity and Syllable Structure

An insightful and influential paper on syllable structure in Luganda, and in fact more generally in Bantu, was published by A.N. Tucker in 1962. In this extended discussion, Tucker develops an account which brings out an "aesthetically satisfying" (122) picture, as he puts it, of the syllable in Luganda, treating a number of problems that have traditionally been recognized to be especially problematic areas for segmentally-oriented theories of phonology: the problem of geminate consonants; the problem of the long/short vowel contrast; the nature of syllable weight or quantity, and its relation to tone. There are a certain number of "dynamic" aspects to his analysis, that is, places where his analysis speaks of one thing "becoming" another under various conditions or subject to various constraints, and in this respect his analysis is amenable to a generative reinterpretation.

Tucker's conclusions focus on aspects such as the following: he says that "one of the outstanding characteristics of Luganda is that, although compensation for elision or contraction is made, this compensation must never allow a long syllable to contain more than two morae. Consequently if two lengthening features come together, their effect is not cumulative." While we might expect this to be stated in turn as a condition on what a possible syllable then is in Luganda, Tucker does not ever in fact do that; he does not take the step of equating limitations on dynamic processes to constraints on possible structures, though put in this way we may have little doubt that he would agree on the natural connection between the two.

Such notions of derivation subject to cumulative restrictions were quite uncharacteristic of most phonological theories of the time, including generative theories; Kisseberth's discussion of "conspiracies" was

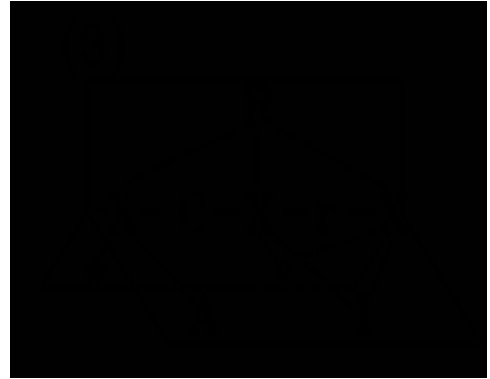
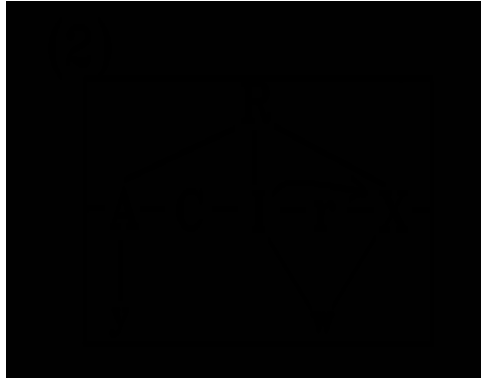
perhaps the first clear discussion in generative terms, and it was not published until close to a decade later.⁵

Tucker is at pains in this paper to motivate the notion of mora as the appropriate analytical tool for understanding vowel length, consonant length, and tonal association, and makes arguments that sound quite contemporary in this respect. For example (145), he argues that the first half of a geminate voiceless stop (as in ku-coppa "to become a pauper") is to be associated with a mora, and is thus tone-bearing; analytically we would associate this mora with a Low tone, and the surprising consequence of this, Tucker notes, is that this Low tone does indeed trigger downstep on following overt High tones. He proceeds to argue (155), as well, on tonal grounds that the syllable must be maintained as a distinct unit, as well as on the grounds that the syllable is the unit which cannot contain more than two moras.

2.4 Vowel Harmony

The treatment of vowel harmony in Igbo was an important example in the armamentarium of the Firthian linguist. Treatments by Ward 1936 and Carnochan 1960 were significant steps, and deserve our attention. Carnochan analyzed the Igbo vowel system into three distinct equipollent (i.e., bivalent) features which he called: L/R (today we would call +/- ATR), I/A (high/low), and Y/W (front/back, or unround/round). Two of these are prosodies -- L/R, and Y/W; but I/A (high/low) is not prosodic, presumably because there is relatively little evidence that it spreads from one phonematic unit to another. Had there been more evidence of the feature low/high spreading, he would have extracted, or factored out, three prosodies, leaving him with abstract V elements. This would have been a good thing, I think it is fair to say, because there is a suffix which Carnochan suggests cannot be defined as anything but an empty V-slot (as we might put it today); Carnochan indicated this with a schwa (@). Thus we end up with the following representation, in (1), which is Carnochan's, which we may compare with an autosegmental rewriting of this, as in (2), or a more thorough-going autosegmental reinterpretation, as in (3). Perhaps Carnochan felt some theoretical discomfiture with the idea of extracting out all phonological material into prosodies in the general case; in any event, he did not do so, even when it seems attractive to us today. Perhaps his notation encouraged the choice he made, because he expresses prosodies in the established Firthian way, resembling a kind of logical notation, with phonematic units being written as if they were arguments, and the prosodies were the functors, as in (1).

(1) o siri R [(A)w (Clr@)y]



3. Effects of Firthian work on autosegmental and metrical studies

What, now, have been the modes and manners of the influence of Firthian thought on current autosegmental and metrical theory? One thing is certain: working linguists in these current traditions have felt little obligation to offer any citation of Firth's theoretical or descriptive work, or to acknowledge a debt to London modes of thought. I have not found any references to Firth in papers published in Linguistic Inquiry. But of the papers on African linguistics directly inspired by Firth's proposals, many are cited and developed at length in the theoretical literature. The irony of the situation demands our attention.

3.1 Tone

I shall begin with one personal example. In my own first work on autosegmental phonology, I was influenced by work by Will Leben, whose work in turn was a development within a generative framework of the

work of such linguists as R.C. Abraham and J.T. Bendor-Samuel, to mention just two. When I looked for additional resources to develop the theory further, I went to find good grammars, and good grammars are necessarily based, to be sure, on the good linguistic insights of their authors. In the event, I found the grammar of Igbo published by M.M. Green and G.E. Igwe 1963, which in turn was heavily influenced by the earlier work of another linguist from the School of Oriental and African Studies, Ida Ward 1936, a linguist influenced, in turn, by J.R. Firth at SOAS.

Green and Igwe made little or no effort to develop a set of general rules for the material that they gathered, but the care and attention they gave to the tonal material, and the weight that they assigned to tone in the organization and presentation of their material, showed clearly their sense of the importance of these tonal factors for understanding the underlying phonological structure of the Igbo language. They also had a clear sense that apparent allomorphy in the language could reflect at times the syntactic structure of the Igbo sentence, and a sense that the apparent variety of surface tonal patterns on the verb in the various tenses must actually be the reflection of some deeper set of regularities in the language. It was this sense, I am convinced, that made subsequent autosegmental analysis using an autonomous tonal tier possible within an autosegmental framework.

Early generative thinking about African tone was not very successful, and much of it had little effect even on generative thought.⁶ Carroll's 1966 generative account of Igbo syntax and phonology, for example, did not apply early generative techniques to the point of developing new insights into the language. Work such as that of Edmondson and Bendor-Samuel's 1966 on Etung, and Arnott's 1964 on Tiv, work that was prosodically based, was more influential, even among generativists. Arnott's work on Tiv led to a reanalysis by McCawley (published, 1978), which in turn drew the attention of Leben in his influential dissertation 1973, and of Goldsmith 1976, and most recently Pulleyblank 1983. In the treatment of Tiv, for example, if we look for it, we can be struck -- and I believe we should be -- by the continuity in the description and the analyses of these authors. In the case of all the authors but the last, Pulleyblank, the focus was on the "tonal melody" as a unit, and how to treat this object that is distinct from the string of segments or phonematic units. There is a constant core of a body of data to be attended to, and to be reworked with tools that varied from case to case; but concern for the same core phenomenon lurking behind the data links all these analyses, despite changes in theoretical stance.

This is a prime example of the coherence that African linguistics lends to linguistic research and scholarship.

3.2 Quantity and Syllable Structure

The work on Luganda syllable structure by Tucker that I mentioned above has been fruitful in its effects on

recent work in theoretical phonology. In a paper that circulated in a number of drafts before being published in 1985, Clements developed an account within an autosegmental model utilizing a skeletal tier that incorporated Tucker's insights and developed more deeply our understanding of syllable structure, and a number of researchers have subsequently pursued these notions additionally, in the Bantu context and elsewhere⁷. More generally, of course, the syllable as a unit in phonological theory has become indispensable, in one form or another.

3.3 Vowel Harmony

A striking example of acknowledged influence of prosodic thinking on generative theory can be found in Fromkin's 1965 article, in which she studies the segmental inventory of Twi, the morphological and syllable structure of the language, and its system of vowel harmony, drawing on her own work on Twi as well as work by such Firthians as Berry 1957 and Carnochan 1960, and work as well by Boadi 1963, which is more Harrisian in its phonological tone.

4. Prosodies, Autosegments, and Rules

It might become easy -- too easy -- to draw the conclusion that Firthian phonology already contained, in its essence, the key ideas in autosegmental theory. I have already suggested one reason why I do not believe that this is correct, and in general it is important, when looking at the history of linguistic theories, not to jump from the first step, in which we find scholarly continuity between two successive stages, to the second, which holds that the two stages are just one. Perhaps it is the fear of this admittedly illogical jump that drives some linguists to exaggerate the lack of scholarly continuity with the past in their own work. Be that as it may, we would be wise to recognize some major differences between Firthian and current autosegmental and metrical theory.⁸ The Firthian approach to word-level regularities of any kind was to posit a prosody -- even a regularity of the mundane sort in which a syllable-final consonant was devoiced. In our current conception of phonological theory, the part of the grammar responsible for such generalizations is quite separate from the strictly autosegmental part, i.e., the part which up till now we have seen as most directly tied to firthian prosodies. In our current view, there are phonological rules, segregated into various components, which interact with well-formedness conditions on phonological structures such as the syllable and the foot; there are, in addition, several levels of phonological representation, though the details remain here a matter of considerable disagreement and research. In short, while the continuities between Firth and current work is real enough, no one should allow themselves to overlook the even greater disparities that separate prosodic analysis from the more articulated theories of our present decade.⁹

5. Conclusions

In this brief note, I have discussed the continuity that African linguistics offers to linguistics, and focused on the relationship between Firthian linguistics and current autosegmental and metrical phonology. I could have chosen other examples, to be sure; African linguistics has equally served as a link between the work of French and Belgian Bantuists and that of current theoreticians, as is, I believe, well-known; that would be a story for another day, with a similar moral, and similar stories could be told regarding Pike's work on syllable structure, and so forth and so on.

My review has attempted to be descriptive rather than normative -- to provide a perspective from which the continuities that we perceive in our professional lives make sense, and from which there are, correspondingly, fewer ironies -- ironies like the "rebirth" of the study of the syllable, or of tone, or of prosodies more generally. In acknowledging that I am being descriptive rather than normative, I trust it is nonetheless clear that I personally believe that the continuity that African linguistics provides is a good thing; what remains an open question, in all seriousness, is whether the divisive effects of linguistic theory are avoidable. I certainly do not wish to be taken to be saying working on linguistic theory *makes* a person narrow-minded, and unaware of what happens outside of their own framework, nor do I wish to be understood as saying that theorists *are* that way. After all, many linguists feel comfortable wearing both the hat of the African linguist and the hat of the linguistic theorist. What I do believe (though I have not substantiated this in these pages) is that as a professional and social matrix, linguistic theory can all too easily be taken, and has often been taken, to provide a rationalization and a justification for what I referred to before as the Balkanization of linguistics -- the unfortunate lack of communication across frameworks or paradigms. It is not the theory *per se* that causes the fragmentation; it is rather that theory provides a convenient means for justifying an otherwise unfortunate, and ultimately unhealthy, narrowness.

But it can only be healthy to be aware of the nature of discontinuity in linguistic theory, so that we may not share the misplaced outrage and apparent frustration of a writer such as Geoffrey Sampson, who, writing in 1980, spoke despairingly of autosegmental phonology as a set of "half-baked ideas" that were "anticipated by far more solid work done in the "wrong" places" [meaning outside of MIT, of course], work that is "not rejected, just ignored" (235), and which is a reinvention of Firthian phonology "without acknowledgement to Firth" (258)¹⁰. Autosegmental phonology is not a reinvention of prosodic phonology; it is a different model which has intentionally maintained the insights of the prosodic school, while providing additional analytic possibilities for the treatment of tone, vowel harmony, syllable structure, and so on, in a number of areas where Firthian phonology had not succeeding in shedding light.

Bibliography

- Arnott, D.W. 1964. Downstep in the Tiv verbal system. African Language Studies 5:34-51.
- Bazell, C.E. et al., editors. 1966. In Memory of J.R.Firth. London: Longmans.
- Bendor-Samuel, J.T. 1960. Some problems of segmentation in the phonological analysis of Terena. Word 16:3, pp. 348-55.
- Berry, J. 1957. Vowel Harmony in Twi. Bulletin of the School of Oriental and African Studies 19:124-30.
- Bloch, Bernard. 1948. A Set of Postulates for Phonemic Analysis. Language 24:3-46.
- Boadi, L. 1963. Palatality as a Factor in Twi Vowel Harmony. Journal of African Languages 2:133-39.
- Borowsky, Toni. 1983. Geminate consonants in Luganda. In Current Approaches to African Linguistics, edited by Jonathan Kaye, Hilda Koopman, Dominique Sportiche, and André Dugas. Dordrecht: Foris Publications.
- Carnochan, J. 1960. Vowel Harmony in Igbo. African Language Studies 1, 1960: 155-63.
- Carroll, Patricia L. 1966. A Transformational Grammar of Igbo. London: Cambridge University Press.
- Clements, George N. 1985. Compensatory Lengthening and Consonant Geminata in Luganda. In Wetzels and Sezer 1985.
- Edmundson, T. and J.T. Bendor-Samuel. 1966. Tone Pattern of Etung. Journal of African Languages 5:1-6.
- Firth, J.R. 1948. Sounds and Prosodies. In Palmer 1970.
- Fromkin, Victoria. 1965. On System-Structure Phonology. Language 41:601-9.
- Fromkin, Victoria, ed. 1978. Tone: A Linguistic Survey. New York: Academic Press.
- Fudge, Erik. 1976. Phonotactics and the Syllable. In Linguistic Studies offered to Joseph Greenberg vol. 2, edited by Alphonse Juilland. Saratoga: Anna Libri.
- Gleason, H.A. 1961. An Introduction to Descriptive Linguistics. New York: Holt, Rinhart and Winston.
- Goldsmith, John. 1976. Autosegmental Phonology. MIT dissertation. Published by Garland Press, New York, 1979.
- Goldsmith, John. 1989. Autosegmental and Metrical Phonology. Oxford: Basil Blackwell.
- Goldsmith, John. In preparation. Harmonic Phonology: Phonology as an Intelligent System.
- Green, M.M. and G.E. Igwe. 1963. A Descriptive Grammar of Igbo. London: Oxford University Press.
- Harris, Zellig. 1944. Simultaneous Components in Phonology. Language. 20:181-205.
- Hill, A.A. 1961. Suprasegmentals, Prosodies, Prosodemes. Comparison and Discussion. Language

37.4:457-68.

Hill, T. 1966. The Technique of Prosodic Analysis. In Bazell 1966.

Hockett, Charles. 1947. Componential Analysis of Sierra Popoluca. IJAL 13: 259-67.

Katamba, Francis. 1985. A non-linear account of the syllable in Luganda. In African Linguistics, ed. Didier L. Goyvaerts. Amsterdam: John Benjamins.

Lamb, Sydney. 1966. Prolegomena to a Theory of Phonology. Language 42:536-73.

Langendoen, D. Terence. 1968. The London School of Linguistics. Cambridge: MIT Press.

Leben, William. 1973. Suprasegmental Phonology. PhD dissertation, MIT.

McCarthy, John. 1979. Formal Problems in Semitic Phonology and Morphology. MIT PhD dissertation.

Distributed by Indiana University Linguistics Club.

McCawley, James. 1978. What is a Tone Language? In Fromkin 1978.

Palmer, F.R., editor. 1970. Prosodic Analysis. London: Oxford University Press.

Pike, Kenneth. 1948. Tone Languages. Ann Arbor: University of Michigan Press.

Pike, Kenneth. 1966. Tagmemic and Matrix Linguistics Applied to Selected African Languages.

November 1966. U.S. Department of Health, Education, and Welfare. Ann Arbor: Center for Research on Language and Language Behavior.

Pulleyblank, Douglas. 1983. Tone in Lexical Phonology. MIT dissertation. Published by D.Reidel, Dordrecht, 1986.

Robins, R.H. 1970. Diversions of Bloomsbury. North-Holland Publishing Company. Amsterdam.

Sampson, Geoffrey. 1980. Schools of Linguistics. London: Hutchinson and Company.

Tucker, A.N. 1962. The Syllable in Luganda: A Prosodic Approach. Journal of African Languages 1.2:122-66.

Ward, Ida C. 1936. An Introduction to the Ibo Language. London: Heffer.

¹. I am grateful to Stephen Anderson, Eric Hamp, and to the editor of this journal for comments on an earlier version of this paper.

². Which is not to say that American theorists did not have a good deal to say of relevance to current autosegmental and metrical models. I have attempted to illustrate that point -- implicitly, but in some detail -- in Goldsmith 1990, referring to the work of Hockett, Bloch, and others. Nonetheless, the heavy effect of Bloomfieldian assumptions about phonological representation in the United States made American work largely less relevant to our current interests when compared to Firthian work.

³. In unpublished writing, which he has been kind enough to give me access to.

⁴. A particular case of this kind of problem is well illustrated and discussed by Fudge 1976, in a discussion of a thorough-going phonemicization of Bella Coola by S.S. Newman. See also Hill 1961.

⁵. The importance of tactics as guiding rule application was first emphasized in Lamb 1966; I discuss this, and some other points related to the matter in the text, in Goldsmith (in preparation).

⁶. One of the few extended discussions of African tone in the heyday of SPE phonology is in the West African context, Tone in generative phonology (1970), edited by Ian Maddieson, Research Notes vol. 3, parts 2 and 3, from the Department of Linguistics and Nigerian Languages, University of Ibadan. Olasope Oyelaran reminds us in his paper of an interesting passage from Gleason 1961, one of the American linguists more aware of prosodic, Firthian trends, and also working on African languages:

It is obvious that linguists in general have been less successful in coping with tone systems than with consonants or vowels....The ...need is for better theory. We should expect that general phonologic theory should be as adequate for tone as for consonants and vowels, but it has not been. This can be only for one of two reasons: either the two are quite different and will require totally different theory (and hence techniques) or our existing theories are insufficiently general. If, as I suspect, the problem is largely of the second sort, then development of a theory better able to handle tone will result automatically in better theory for all phonologic subsystems."

⁷. See, for example, Katamba 1985 and Borowsky 1983.

⁸. I was tempted to write, "Was SOAS the Port Royal of nonlinear phonology?" But in the case of the Port Royal grammar, too, all the questions about measuring continuity over disparate traditions remain thorny and unsettled.

⁹. This is hardly the place for developing what I take to be the current view of phonology, but I have done this elsewhere; cf. Goldsmith 1990.

¹⁰. This is not true, I might add; on p. 15 (Goldsmith 1976), I observe that a prime motivation for the study of suprasegmentals within the framework of generative phonology is that generative phonology is not as equipped as Firthian analysis to treat problems of suprasegmentals.