Where's Phonology in Typology?

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As is well-known, phonological typology was a central concern to many structuralists (Trubetzkoy 1939, Jakobson 1968, Hockett 1955) and also figured centrally in many treatments of typology in general, e.g. Greenberg (1957, 1978). On the other hand, there has been a tendency for subsequent discussions and textbooks on linguistic typology to underrepresent and even ignore phonology, e.g. Whaley (1997). This is unfortunate not only because phonological typology is of importance in itself, but also because the approach of phonologists to typology might serve as a model for others to emulate. The main points I would like to make in this brief note are the following:

(i) Phonological typology involves the comparative study of linguistic SYSTEMS—i.e. paradigmatic and syntagmatic properties of inputs, outputs, and their relations. While phonological typology and phonetic typology are sometimes not distinguished, a surface inventory is not a system in the sense intended here.

(ii) There is no clear division between phonological typology and phonological theory. Given their shared concern with the nature of phonological systems, one can't do insightful typology without addressing the same analytical issues that confront phonological theory. Throughout the history of phonology, the two have been inseparable both in principle and in practice.

The inseparability of phonological theory and typology can be first observed in the chapter titles of Goldsmith (ed.), *the Handbook of Phonological Theory* (1995). A few chapters appear to be primarily concerned with "theory" in the sense of formal modeling, e.g. "The organization of the grammar" (K. P. Mohanan), "The cycle in phonology" (Jennifer Cole). Several others explictly combine both "theory" and "typology": "The syllable in phonological theory" (Juliette Blevins), "Vowel harmony" (Harry van der Hulst & Jeroen van de Weijer). A third group of chapters combine and apply "theory" and "typology" to a language or family of languages: "Tone: African languages" (David Odden), "Current issues in the phonology of Australian languages" (Nick Evans). These and other chapters differ in the extent to which discussion is driven by the phenomena vs. formal theoretical concerns. In all cases, however, it is clear that cross-linguistic comparison is of high priority.

It is also noteworthy that Goldsmith's Table of Contents does not overtly group the chapters, but simply lists them 1-32. In contrast, Baltin & Collins (eds), *The Handbook of Contemporary Syntactic Theory* (2000) organizes its 23 chapters under the following headings: I. Derivation vs. representation. II. Movement. III. Argument structure and phrase

structure, IV. Functional projections. V. Interface with interpretation. VI. External evaluation of syntax. In this corresponding syntax volume, which adds the qualifier "contemporary", there are no chapters of the sort "Current issues in the syntax of Australian languages". Emphasis is definitely on "theory as modeling". As a rather striking example, although the chapter entitled "Case" (Hiroyuki Ura) has sections entitled "Ergative languages and split ergativity" (§3.3) and "A minimalist approach to ergativity" (§5.2), neither provides a single language example to show the reader what an ergative case marker actually looks like. Languages are clearly secondary in much of this volume, as seen also by the fact that there is no language index (vs. the phonology handbook, which has one that takes 4 1/2 pages).

While *The Handbook of Contemporary Syntactic Theory* is organized around issues in formal syntactic theory, *the Handbook of Phonological Theory* concerns the study of phonology, i.e. sound systems, in general. This corresponds with the following difference between the two subfields:

Phonologists of all persuasions meet and publish in the same places. Consider for example, the contents of the first issue of *Phonology [Yearbook]* (1984), where prosodic morphology, natural phonology, intonational phonology, phonological typology, experimental phonology, and particle phonology peacefully cohabit: "Morphological and prosodic domains in lexical phonology" (Geert Booij), "Explaining natural phonology" (Wolfgang U. Dressler), "Declination: a review and some hypotheses" (D. Robert Ladd), "Vowel system universals and typology: prologue to theory" (Roger Lass), "Prosodic phonology and phonetics" (John Ohala & Haruko Kawasaki), "The fundamentals of particle phonology" (Sanford A. Schane). The journal *Phonology* is in principle open to all facets and all models of the study of phonology: formal, functional, cognitive, experimental, descriptive, typological, historical, phonetic etc.

There is a corresponding syntax journal, founded in 1998, whose call for *Syntaxis* 4 (Universidad de Huelva) reads as follows:

"*Syntaxis, An International Journal of Syntactic Research* is a forum to report results of current research in syntax. It publishes high quality papers in all areas directly related to the syntax of human languages. Both theoretical and descriptive studies, under formalist or functionalist approaches are welcome. Inspired by the spirit of the original Greek term "syntaxis", a major goal of the journal is to bring together different perspectives and approaches to the study of how languages put words together."

However, my impression is that syntacticians from a comparable range of "persuasions" (formal, functional, cognitive etc.) do not generally meet or publish in the same places. In the Department of Linguistics at Berkeley there is a weekly Phonetics-Phonology Forum (PHORUM), where faculty, students, and visitors present work in progress on any aspect of the study of speech sounds and sound systems. In addition to specific lab- or project meetings, diverse "P-types" have at least this one meeting where they are not compartmentalized into formal phonologists vs. typologists (etc.). While our department also has a very active Syntax Circle attended by "S-types" of all stripes, I think such a forum is

relatively rare. Compared to phonology, the chasm has been greater between formal syntax vs. typology, the latter category sometimes reserved for cross-linguistic syntacticians who happen not to be driven by one of the named approaches to formal syntax.

What accounts for this difference? Why does it seem easier for scholars of sound systems to see each other engaged in the same enterprise vs. scholars of grammatical systems? There seem to be two possibilities:

(i) Differences between phonology and syntax? Differences may be either formal (Bromberger & Halle 1989) or functional: phonology encodes sounds, syntax encodes meaning. It is hard to imagine a phonological theory that is monolingual: Despite its title, Chomsky & Halle's *The Sound Pattern of English* (1968:447-8) lists over 100 languages in its language index. By comparison, not a single language appears in the index to Chomsky (1965). Formal syntactic theory has since and elsewhere increased its interest in languages, but at nowhere near the frequency of phonological theory. It is still possible for a syntactician (or semanticist) to spend a whole career on a single language, including one's own. Maybe this is justified by the nature of syntax, which appears much more vast than phonology.

(ii) Differences between phonologists vs. syntacticians? Does the difference reconstruct back to the influence of the founding fathers of generative grammar (Morris Halle vs. Noam Chomsky)? Perhaps formal syntacticians take the call to UG more seriously than formal phonologists? I note that formal phonology has usually not been the place where ideological battles are fought. Maybe phonologists have broader interests or are more open-minded? As a phonologist, I have been struck by the kind of formal syntactician who either will not or cannot appreciate others' data, descriptions, typologies etc. unless they are translated into his/her specific model.

Whatever the reasons, phonology must be doing something right, as least as far as the theory vs. typology relation is concerned. There have, of course, been attempts to define each independently. The synchronic and diachronic goals of phonological theory can be stated as follows (Hyman 2001:149):

(i) the goals of synchronic phonology are to determine

- universal properties of sound patterns in languages (i.e. what is a possible phonology?)
- what's going on in the heads of speakers with respect to sound patterns

(ii) the goals of diachronic phonology are to determine:

- where phonology comes from (e.g. "phonologization")
- how phonology changes (e.g. telescoping, restructuring, rule inversion, analogy etc.)
- where phonology goes (e.g. morphologization, lexicalization, rule loss etc.)

According to one traditional definition, typology is "... a principled way of classifying the languages of the world by the most significant properties which distinguish one from another." (Hagège 1992:7). Correspondingly, Vajda (2001) says of phonological typology: "...it is possible to classify languages according to the phonemes they contain.... typology is the study of structural features across languages. Phonological typology involves comparing languages according to the number or type of sounds they contain."

Most phonologists are, however, not ready to relegate typology to those who wish to "classify languages". As McCarthy (2002:1) makes clear, typology is something which phonologists do all the time:

"One of the most compelling features of OT, in my view, is the way that it unites description of individual languages with explanation of language typology. As a phonologist, I have always been impressed and sometimes overwhelmed by how the complexity and idiosyncrasy of each language's phonology is juxtaposed with the clarity and abundance of solid typological generalizations. Even though this is arguably the central research problem of phonology and of linguistic theory in general, progress in consolidating description and explanation has at best been halting and occasionally retrograde."

What I would say is that phonological theory and phonological typology are attempts to characterize how languages encode the same substance (phonetics) into structured sound systems. For example, we might ask the question: How do different languages "systematize" the color features Back and Round? Some possibilities are:

(i) on vowels and consonants	/i, e, u, o, a/, /k, k^j, k^w/ etc.	(examples i./ii. have canonical triangular vowel system)
(ii) on vowels only	/i, e, u, o, a/, /k/ etc.	
(iii) on consonants only	/ɨ, ə, a/, /k, k^j, k^w/ etc.	(vertical vowel system)
(iv) on some vowels only	/i, e, u, o, I, A/	(vowel harmony system)
(v) on whole morphemes	/CVC/, /CVC/^{j}, /CVC/^{w}	(palatal and labial prosodies)

It should be noted that the above "typology" is an underlying one, based on phonological analysis, not on surface inventories (contrasting or otherwise). This, then, raises the question of what kind of analytic representation should be typologized. To answer this one has to determine:

(i) the level: morphophonemic vs. phonemic vs. phonetic?
(ii) the function: distinctive vs. contrastive vs. allophonic (Martinet 1960)
(iii) the domain: segmental vs. suprasegmental (syllable, morpheme, prosodic word etc.)

The fundamental idea of (structuralist) phonology, that the same sounds found on the surface can have completely different functions, is intrinsically typological. For example, the choice of [t] rather than [d] can be:

(i) distinctive (paradigmatic): the difference between [t] and [d] distinguishes between morphemes, e.g. English *toe*, *doe*.

(ii) contrastive (syntagmatic): the difference between [t] and [d] helps determine where one is in the spoken chain—cf. "demarcative function"); Basaá [t] indicates the beginning of a stem:

ɓa-Tâ/ [ɓatâ] 'fathers' vs. /ɓáTâ/ [ɓádâ] ~ [ɓárâ] 'gather'

(iii) allophonic: the difference between [t] and [d] is determined by phonetic context, e.g. Korean /t/ is realized [d] intervocalically, e.g. /su/ 'water' + /to/ 'way' → [sudo] 'waterway, waterworks'.

Hence, phonology compares SYSTEMS by definition—and, again, a surface inventory is not a system. I am thus arguing that any putative difference between "formal theory" vs. "typology" cannot be identified as "deep" vs. "surface". It also cannot be characterized as "universal" vs. "particular"; cf. "...the goal of typology is to uncover universals of language, most of which are universals of grammatical variation." (Croft 2003:200)

Finally, any putative difference cannot be reduced to "explanatory" vs. "non-explanatory". There are, however, disagreements concerning whether (explanations from) typology should be incorporated into grammars:

(i) "...grammars do not encode typological generalizations, either directly or indirectly." (Newmeyer 1998:162)

(ii) "OT, though, is inherently typological: the grammar of one language inevitably incorporates claims about the grammars of all languages." (McCarthy 2002:1)

Interestingly, the above conflicting statements both come from formal linguists—albeit the first from a syntactician, the second from a phonologist! Perhaps this is not an accident. The question is whether the formal and typological approaches to syntax can support each other as has been so beneficial in phonology. Can we look forward to the day when the Syntax-Semantics Forum meets as a whole in all departments?

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