

BOOK REVIEWS

Bruce Hayes: *Introductory Phonology* (Blackwell Textbooks in Linguistics). Wiley-Blackwell, Malden MA & Oxford, 2009. pp ix + 323.

As its title suggests, *Introductory Phonology* is a coursebook intended for undergraduate students who have already studied some linguistics (including phonetics) but are not yet conversant with the basic notions and methods of phonology. The author points out in the preface that an introductory coursebook is not meant to be easier than other textbooks per se but rather it should emphasise two crucial things, namely the analysis of phonological data along with methods that lead to the most accurate analyses possible, and the scientific context of phonological analysis, i.e., what we are trying to understand when we carry out such analyses. The main goal of the author is to provide a solid foundation for more advanced theoretical study.

The book comprises fifteen chapters in the following order: *Phonetics and Phonology*, *Phonemic Analysis*, *More on Phonemes*, *Features*, *Morphology*, *Phonological Alternation I and II*, *Morphophonemic Analysis*, *Productivity*, *The Role of Morphology and Syntax*, *Diachrony and Synchrony*, *Abstractness*, *Syllables*, *Stress*, *Stress Rules and Syllable Weight* and *Tone and Intonation*. At the end of each chapter, there is a set of questions and practical exercises based on the given chapter, and a list of suggested further readings is also presented.

As phonological data are phonetic in nature and phonological rules and mechanisms are inextricably intertwined with phonetics, it is useful if not essential for students to be familiarised with the basics of phonetics first, before engaging in phonological studies. This view is advocated by the author, too, therefore Chapter 1 (*Phonetics and Phonology*) begins with a quick review of or introduction to phonetics, depending on whether the students have already learnt phonetics or are completely new to this field. The author seems to imply that the former case is more favourable since this chapter is originally intended as a review; however, the possibility of the

latter case is not excluded, either, provided that the reader expands it with further readings and practical materials. After a short enumeration and description of the main fields of phonetics, the structure of the vocal tract is presented in detail, complemented with illustrations. It is logically followed by the description of vowels and consonants and their connection with the aforementioned speech organs. The list and description of the consonants and vowels of the world's languages is augmented with IPA charts. Additionally, stress and tone are mentioned very briefly and the symbols for diacritics are also listed. The chapter ends with a quick clarification of the two basic transcription styles (i.e., broad transcription vs. narrow transcription). This chapter contains (alongside with questions, problems and suggested reading) links to extra web exercises, which can help students practise phonetic transcription.

Chapter 2 (*Phonemic Analysis*) begins with a short definition of phonology and phonetics, and a description of what phoneticians and phonologists are concerned with. After that, some basic notions necessary for phonemic analysis are introduced and discussed such as phonemes, distinctiveness and contrast, and allophonic variation. Then the formalisation of rules is gradually introduced. First, the characteristics of phonological rules are mentioned (i.e., they are language specific, usually productive, give rise to well-formedness intuitions, are untaught, unconscious etc.). It is laudable that the author draws attention to the fact that phonological rules are unlike traffic rules or normative grammar taught at school because readers unfamiliar with this field could easily assume that these things are basically the same. Phonological rules are acquired instinctively at an early age and violations of these rules result in utterances sounding counter-intuitive, whereas utterances deemed 'incorrect' by normative grammar are not necessarily sensed as such. After it is explained how to express environments in a formalised way, the chapter goes on with the characterisation of allophones as variants of a single phoneme, i.e., an abstract underlying representation. This process is illustrated by examples such as devoicing, dentalisation and velarisation. Another important concept of traditional generative phonology, derivation, is introduced. In order to make things clearer, these processes are demonstrated by further examples from English and Spanish. Thereafter methods for phonemicisation are presented, such as looking for minimal pairs and near minimal pairs, and using local environments to establish complementary distribution. Finally, the concept of natural class is defined and illustrated with a Maasai example.

Chapter 3 (*More on Phonemes*) is likewise concerned with phonemes and phonemic analyses. First, it draws attention to the fact that phonemic analysis and writing often have little in common. Then further problems are described which are in connection with phonemes and phonemic analysis. It is discussed whether subtle nuances and fine distinctions are audible, what the notion of the 'same sound' is to native speakers, and how speakers internalise the rules that derive various allophones in the appropriate environment. After that, another important aspect of phonemicisation is pointed out, namely that the previously described steps of analysis do not always suffice in deciding whether the sounds in question are different phonemes or merely allophones of the same phoneme. In these cases, it is crucial to investigate whether there is phonetic similarity between them. This is illustrated with the classic example of /h/ and /ɥ/, which are in complementary distribution in English but cannot be considered allophones of the same phoneme as they are not similar phonetically. Other problematic areas of phonemicisation are discussed, including the contour segments and sequence probe, free variation and contextually limited contrasts, and the role of phonotactics.

Chapter 4 (*Features*) introduces the concept of feature theory and its representation in phonology. First, feature matrices are shown, then it is explained how rules can be applied to feature representations. A fairly mainstream feature set is presented, which was first proposed in Chomsky and Halle's *The Sound Pattern of English* (1968). After the goals of characterising natural classes are set, features are defined (including manner, vowel, place and laryngeal features as well as the possibility of zero as a feature value). It is also explained when and how the analyst should use these features when writing rules. At the end of the chapter, feature charts are presented.

Chapter 5 (*Morphology*) covers an area that is often interfaced with phonology and thus is extremely important to mention and is often neglected by generative theories. The basic notions of morphology are presented, including the formal types of morphemes, the notation of morphemes, compounding, morphological structure and morphological functions. After a brief introduction, the construction of morphological rules is explained, such as the rules for inflection and derivation, and the ordering of the aforementioned rules. Another important aspect, the productivity of rules, is also discussed. Lastly, it is explained quickly how to carry out a morphological analysis when we encounter an unfamiliar language and it is shown how to use such analyses in elicitation.

Chapter 6 (*Phonological Alternation I*) is a logical continuation of the previous chapter and begins with investigating alternation as a consequence of the phonology-morphology interface. Alternations in English /t/-final stems such as pre-glottalisation, tapping and aspiration are discussed. The issue of components and multi-component derivations is presented briefly and it is also explained why and how the existence of alternation can be useful for phonologists. Then a sample analysis is given, namely the case of rhythmic lengthening in Choctaw. The next instance of phonological alternation is the phenomenon called neutralisation. The notion of neutralisation is explained, followed by a series of illustrative examples from various languages. Finally, other processes akin to neutralisation are discussed, such as dynamic vs. static neutralisation and near-neutralisation.

As a sequel to the previous chapter, Chapter 7 (*Phonological Alternation II*) carries on with the description of phonological alternation. Rules are discussed which apply in environments that are defined phonemically, rather than phonetically. The focus of the chapter is rule ordering, which is illustrated by an extended analysis of Chimwiini morphology and its interaction with phonology.

In Chapter 8 (*Morphophonemic Analysis*), the steps of morphophonemic analysis are presented first, such as phonemicisation, morpheme division, setting up underlying representations, constructing underlying representations under a particular hypothesis, working on the rules and clues for choosing underlying representations. There is a brief section on what isolation form shortcuts are and why they sometimes fail. This is followed by a longer section demonstrating the steps of morphophonemic analysis with the help of an extended example from Lardil. Thereafter, the most important terminology of rule ordering is presented, namely the definitions of feeding, bleeding, counterfeeding and counterbleeding. The author quite wisely explains the differences between feeding vs. counterbleeding and bleeding vs. counterfeeding, preventing students/readers from arriving at the erroneous conclusion that these concepts are basically the same. At the end of this chapter, the four types of rule ordering are summarised in a table, which makes them even clearer and easier to remember.

In Chapter 9 (*Productivity*), phonological rules are classified according to their productivity. Fully productive rules such as vowel nasalisation and almost fully productive rules such as postnasal /t/-deletion in American English dialects are mentioned and described. Polish /n/-weakening is brought up as an example to illustrate that exceptions do not necessarily disprove rules or their productivity. Other examples demonstrate lesser degrees of productivity and a possible case of a non-rule is presented as well. Thereafter the definitions of minor and major rules are provided. Some exceptions to the previously mentioned rules are also discussed. Wug-testing is suggested as a possible experiment with productivity. In the following section, alternations specific to single morphemes are presented, along with ambiguous cases that are hard to diagnose. As a summary of the chapter, it is explained when a morphological or lexical account is required, when there is need for phonological analysis and what the so-called intermediate cases are, where the correct way of analysis cannot be determined.

Chapter 10 (*The Role of Morphology and Syntax*) discusses how phonology is connected with morphology and syntax. Two central mechanisms are covered, those that have been suggested as playing a crucial role in mediating between morphology, syntax and phonology, namely bounding domains and edge-sensitive rules. First, bounding is discussed as well as rules/processes that are associated with it, such as the creation of pseudo-minimal pairs by bounding, non-bounded rules, stem-bounded rules, word-bounding, the hierarchy of bounding domains and how rules respect it, and rules bounded by phonological phrases. Second, edge-sensitive rules are introduced. In the end, the functions of the two mechanisms discussed previously, i.e., bounding and edge-sensitivity, are described.

In Chapter 11 (*Diachrony and Synchrony*), rules are discussed in the light of language change and historical linguistics. Two important terms are introduced, namely, diachrony and synchrony. The author intends to eliminate a widespread yet false assumption that the phonology of the language at any time is simply the accumulation of sound changes that have occurred in the past. The example brought up in order to prove that this is merely a misconception is the phenomenon called restructuring. This train of thought is made more specific by the analysis of the /m/-/w/ distinction in conservative American English. Before going on, diachronic phoneme creation is mentioned briefly. In the section entitled 'The Fate of Rules', cases are considered in which an originally optional rule happens to apply with 100% frequency. These include certain neutralising rules (ones that create alternations and others that do not). At the end of the chapter, restructuring is defined in another way, namely, as a restructuring of phonological rules instead of underlying representations. It is followed by an overall summary of restructuring.

Chapter 12 (*Abstractness*) is devoted to phonological analyses which use underlying representations extremely different from surface forms. These are often referred to as abstract analyses. Two illustrative examples are given to show how abstract analyses work: one is the case of Polish vowel ~ zero alternation and the other is the discussion of the (un)predictability of English stress by Chomsky and Halle (1968). The author raises questions that could possibly cast doubt on the plausibility of such analyses; however, he does not intend to take a clear stance concerning the probable truth or falsehood of abstract analyses in general.

Chapter 13 (*Syllables*) introduces a phonological entity that is unique in that it, unlike many other phonological entities, stands out to native speakers at a conscious level. People can intuitively syllabify words, arrange syllables in various ways and

count them much more easily than they can manipulate individual segments, although their intuitions about syllable boundaries are very often unclear. The representation of syllable structure is shown first, which is followed by rules and general principles of syllabification. Then syllables in phonological derivations are discussed in detail, or more precisely, the role and place of syllabification in phonological derivations is described. After that, the coda-onset distinction is analysed along with the consequences that result from making such a distinction. Amongst the examples illustrating this is a survey of obligatory onsets, optional and forbidden codas, neutralisation in codas, fortition and lenition and deletion in codas. This section concludes with sketching a general pattern in syllable-based alternation. The next section continues with the discussion of syllables and derivations. This time, a case of vocalic epenthesis is presented with the help of a Yawelmani Yokuts example. Lastly, other remedies for unsyllabifiable consonants are provided, such as the deletion of stray consonants.

Chapter 14 (*Stress, Stress Rules and Syllable Weight*) covers the rules that determine where stress is placed, relating them to syllables and syllable structure. Some general properties of stress are described at the beginning of this chapter, such as culminativity, the absence of syllable-internal contrasts and fixed vs. free stress. This is followed by the illustration of stress rules with examples from various languages. Alternating stress, a phenomenon found in many languages, is also explained. Syllable weight (the distinction between heavy and light syllables) seems to influence stress in a number of languages, therefore the last section of this chapter is mainly concerned with the effect of syllable weight and its interaction with stress rules.

Chapter 15 (*Tone and Intonation*) discusses suprasegmental phenomena. In the first section of this chapter, languages are classified according to how they use pitch. Languages can be subsumed under the following categories: tone languages (i.e., languages that use pitch to distinguish words), intonation languages (where pitch does not distinguish words) and pitch accent languages (which is something of an intermediate case, a transition between pitch languages and intonation languages). The following section discusses English intonation, with special emphasis on tunes, such as the declarative tune, the 'emphatic question tune', the regular question tune, the surprise tune and the 'predictable' tune, followed by a short summary of intonation. Basic notions like text and tune, contour tones and intonational meanings are clarified. In the last section of this chapter, the presence of tonal stability in tone languages is discussed.

The book contains an appendix following the last chapter featuring the author's notes and useful pieces of advice to phonology teachers on how to present phonology problems to students.

The last section of the book is an index of terminology, names and languages mentioned in the text. As references and suggested readings are listed at the end of each chapter, there is no bibliography section at the end of the book.

Introductory Phonology is an excellently written coursebook; however, it contains a small number of minor inaccuracies that should be pointed out here.

The word *English* is sometimes used as a synonym for *American English*. It would not be a problem if it had been clarified in the beginning, when the term is first used. (It is pointed out only later.) Moreover, it causes a minor confusion when it comes to the occasional discussion of English dialects other than American.

On page 8, the author says: "English dialects have (at least) three central approximants, namely [j], as in youth, [w], as in win and [r] as in ray". This statement can be

misleading, as there are English dialects (e.g., Scottish English) which do not have an alveolar approximant, but rather an alveolar trill instead. Thus such English dialects most probably have less than three central approximants. The above statement could be rectified by writing “the majority of English dialects” instead of “English dialects” or “American English dialects”, if that is meant by “English dialects”.

On page 8, the dental–interdental distinction is mentioned. This, as is noted by the author, is indeed an irrelevantly subtle nuance, but if it is mentioned at all, perhaps we could add that interdental is the more American and dental is the more British way of producing these sounds.

On page 10, it is written that “Glottal sounds are made by moving the vocal cords close to one another. English has a voiceless glottal fricative [h]”. Although it is not present in all dialects of American English, the glottal stop should be listed amongst the glottal sounds of English.

On page 209, *r*-intrusion in Standard British English is mentioned as an example of a non-bounded rule. This observation is correct, but unfortunately the same thing cannot be stated with that much certainty about the analysis presented. *R*-intrusion is illustrated with utterances containing the name *Kafka*. Two types of environment are listed. In the first group of utterances (*Kafka is...*, *Kafka election* and *Kafka-ish*) *Kafka* (i.e., a word ending in a schwa) is followed by either another word or a suffix. These environments have one thing in common: the schwa is followed by an unstressed vowel. In such environments the rule of *r*-intrusion applies. As is well known, this rule clearly does not apply when the schwa is followed by a pause or a phonological break. Now let us see what happens when the schwa (or any vowel to which *r*-intrusion could possibly apply) is followed by a stressed vowel (as in utterances like *Kafka elephants* and *Kafkaesque*). It is claimed here that in such cases there is no *r*-intrusion, but a different epenthesis rule applies instead, namely glottal stop insertion. This claim, in my view, is slightly inaccurate. Although glottal stop insertion is possible in these environments (especially in slow, careful, formal speech or in very old-fashioned conservative RP) and in other environments as well (whenever a schwa or any other vowel in question is followed by another vowel, be it stressed or an unstressed), the possibility of *r*-intrusion is by no means excluded. In fact, this is much more common in everyday speech than glottal stop insertion. This has already been mentioned in *Accents of English* (1986) by John Wells and this tendency seems to have become stronger since the 80s. Thus, the rule of *r*-intrusion is not blocked by a following stressed vowel. There might be social variation, but in general, *r*-intrusion applies across the board and is only blocked by a cessation of speech.

Despite the minor inaccuracies listed above, *Introductory Phonology* is a well-written book. The chapters are built upon each other logically. Previously shared information is often revised in the following chapters in one way or another, which makes it easier for the reader to follow what is being said. Ideas and analytical methods are elaborated on gradually, always from the easier issues towards the most complex ones. The style of the book is clear, concise and easy to follow, words (technical terms) with unusual spelling or pronunciation are transcribed phonetically. Therefore the book is particularly suited for students, native and non-native English speakers alike. The questions and exercises or phonological/morphological problems can be answered or solved after careful reading of the respective chapter, yet they are intriguing enough to keep the students interested. The text is augmented with very decorative charts, tables

and diagrams and a rich collection of further readings at the end of each chapter. All in all, I can wholeheartedly recommend this book for students of linguistics or anyone who is interested in phonology.

Lilla Magyar

Markus A. Pöchtrager: The structure of length. Doctoral dissertation, Universität Wien, 2006. pp 286. Downloadable from <http://www.unice.fr/dsl/tobweb/gppapers.htm>

In this dissertation, Markus A. Pöchtrager (MAP) introduces a research program that started out as a refinement of Government Phonology (Harris 1990; Kaye et al. 1985; 1990; Kaye 1995; 2000; among many more). Accordingly, the new and the old theory share a number of features: We encounter a highly restrictive, representational theory using a small number of monovalent units (“elements”). The non-arbitrariness principle (“There is a direct relation between a phonological process and the context in which it occurs”, Kaye et al. 1990, 194) is crucial to both; it is even the trigger to the formulation of the new theory. But while Government Phonology (GP) uses a linear sequence of skeletal slots that are dominated by constituents (“the structure”) and to which elements (“the melody”) are associated, MAP proposes trees of the X-bar type whose terminal nodes can be annotated with melody. No part of the string can be interpreted without taking into account the relations that tie it to other parts of the string (cf. chapter 3). This brings phonology one step further away from segmentalism (cf. Bachmaier 2006), and closer to syntax (cf. chapter 2). These bigger structures allow MAP to structurally encode properties that have been regarded as melodic, thus reducing the number of elements to four.

It is, however, not a complete handbook for a new theory; rather, it presents preliminary results of a research programme since dubbed GP 2.0 (Jensen et al. 2009; Kaye–Pöchtrager 2009; Živanonvić–Pöchtrager 2010), formerly known as Big Tree Phonology (Kaye–Pöchtrager 2005) and by other names. By analysing a number of problems of GP, MAP arrives at a “shopping list” of ingredients for a new, improved model of phonology and presents us with an idea about how these can be incorporated.

The dissertation has the following structure: after a table of contents (3 pages), acknowledgements (2 pages), and a preface (3 pages), Chapter 1 (43 pages) points out problems that GP faces, shows how and why possible solutions fail miserably and gives a preview of the direction MAP envisions. Chapter 2 (39 pages) shows further problems and works out the first properties of the new proposal. In chapter 3 (50 pages), the basics of the new model are introduced by putting the basic building blocks together. Chapter 4 (61 pages) expands the model to Estonian, showing that the infamous overlength of that language is predicted by the model. In chapter 5 (40 pages), an account of morphologically complex strings is offered, and the model is extended to Italian data. Finally, chapter 6 (30 pages) shows how the new model deals with consonant clusters. A summary (3 pages) and an extensive bibliography (9 pages) conclude the dissertation.

In what follows, I will summarise each chapter in turn, then comment on the dissertation as a whole.

Chapter 1 (*From melody to structure*) shows three problems that GP encounters and also mentions possible solutions. At the same time MAP shows that these suggested solutions—though certainly going in the right direction—are not implementable in GP.

The first problem is the old question of over-generation. The conclusion to draw seems to be: the fewer elements, the less over-generation.

As a second problem, the distribution of length in NYC English is brought up: Stressed vowels lengthen before consonants that do not contain the element **H** (*bid* vs. *bit*, *bead* vs. *beat*, etc.). However, according to the non-arbitrariness principle, structure (length) cannot depend on melody (the presence or absence of a certain element). MAP's fortis-lenis hypothesis states that the element **H** is to be replaced by additional structure. Therefore lenis consonants (traditionally ones that do not contain **H**) are in fact shorter than their fortis counterparts, leaving more space to be taken up by the vowel. However, this solution is not implementable in GP, as an additional timing slot does not fit into the maximally binary branching structures.

The third problem concerns the stop-element **ʔ** that behaves out of line in several ways: for one, it never occurs in nuclei. Also, it is the only element that never spreads. Data suggests that it is connected to length as well: Jensen (1994) proposes to re-interpret **ʔ** as structure instead of melody to make sense of data from the Atlantic language Pulaar. However, this is, again, not implementable in GP.

As neither the replacement by structure of **H** nor of **ʔ** is implementable in GP, the combination of the two proposals is even less so. X-bar structure is brought up as a possible solution, but not elaborated in detail yet.

Chapter 2 (*The winds of change*) presents some more problems of GP and then plunges into the adventure by presenting the basic building blocks of the new theory. Among the problems we find superheavy rhymes, i.e., long vowels followed by consonant clusters. Not only are they structurally too big for GP, but in English there is a connection between the melody in the vowel and the quality of the following cluster—counter to the non-arbitrariness principle again.

Another problem concerns the “complexity condition” which states that, in a branching constituent, the governed expression must not be more complex than the governing one (Harris 1990). If both are of equal complexity, the one containing **A** governs the one without **A** (Kaye 2000). This is problematic for two reasons: (i) it is a mere observation, not an explanation; (ii) the observation is not even very accurate.

Obviously, most of the problems listed in chapters 1 and 2 are not new, but they have to my knowledge never been listed in this clarity. For MAP there is only one feasible solution: Standard GP has to be thrown overboard, a more accurate model of phonology is needed.

What he proposes are X-bar structures similar to the ones we know from syntax. x-slots can be annotated as Onsets (xO) or Nuclei (xN), or stand unannotated (x). Also, all of these terminals can be annotated with melody (to be slightly revised later). O and N type nodes (xO, xN or projections thereof) can merge with other constituents and project to a higher bar level.

This chapter also introduces a number of ways to license positions: a head can either m-command or control an unannotated x-slot—or neither. Interpretation depends on the size of the structure (the number of projections of the head) and the way in which a head licenses (an)other node(s). Thus the difference that was formerly encoded in melody (**ʔ** or **H**) is now a matter of structure. Former **ʔ** corresponds to a two-layered

structure, while a head that m-commands its highest complement corresponds to a former phonological expression with **H**.

Stand-alone consonants will have the following structures: glides and [r] are non-projecting, fricatives are one-layered, and stops (including nasals and [l]) are two-layered structures. Some of these representations will be slightly modified later on.

Restrictions concerning the melody in bare x-slots are introduced, and the special status of **A** and **L** is pointed out (to be worked out in more detail in chapter 6 and in later work by MAP (and others), see e.g. Jensen et al. 2009).

Chapter 3 (*Higher level structure*) shows how the representations of stand-alone segments can (and usually will) merge to assure that every x-slot is licensed. MAP introduces onset projections that are maximally two-layered, and nuclear projections which can take up to two complements to their right as well, but can have one further complement to the left (cf. Figure 1). Only one of the nuclear heads, the domain head, can project even further up to become the root of the entire tree structure that corresponds to the former string of segments and forms a (phonological) word. Each node poses restrictions on which constituents it can merge with. Disregarding α and γ in Figure 1 for the moment, the possibilities of node β are explored. Depending on the kind of complement we find there, three types of structures can be distinguished. If β is a bare x, we get a so-called *bee* structure, if it is of O-type (xO or a projection thereof) we get a *bid* structure, and an N-type (xN or a projection thereof) gives us a *libby* structure—the names are examples of words with these structures.

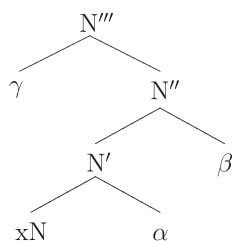


Fig. 1

Maximal projection of a nuclear head

MAP elaborates on each of these structures in turn, explaining the predictions they make and gives conditions (both language specific and probably universal) on their make-up. Some of these conditions seem like stipulations at this stage of the model, and MAP stresses the need for further research and refinement in this area. It is clear, however, that the trade-off between vowel length and consonant length (fortis/lenis) as we find it in English is easily expressed by differences in m-command relations.

The chapter closes with remarks on a serious but yet unresolved problem of the present model: lenis/fortis stops occur after non-domain heads (unstressed nuclei). According to the present model we would expect the trade-off of length between the vowel and following onset to work in these positions as well, but contrarily, English unstressed vowels are always short.

The goal of chapter 4 (*Estonian meets English*) is to apply the new framework to Estonian. As it turns out, the length system of this language is not as special as usually assumed, but for the most part identical to that of English. This is partly because earlier accounts neglected the role of morphology, but it can mainly be attributed to

the different point of view of the new model. After the many parallels between Estonian and English become obvious, the differences are easily pinpointed.

Estonian, like English, shows a trade-off effect between the length of a stressed vowel and a following consonant. Usually, there are 4 slots available, out of which the vowel takes up 1–3 and the consonant the remaining 3–1. This fits nicely into this new model of phonology. While words like [si:r:d] ‘silk’ have the same structure as English *bead*, and [ki:d:] ‘praise’ the same as *beat*, English does not allow for structures like [jud:] ‘story’, which constitute the third logical possibility of length distribution.

Further on, MAP points out restrictions on domains in Estonian as compared to English and defines some more properties of the new theory. He then carries on by showing that the length alternations in Estonian—as between the nominative and the partitive (same length) vs. the nominative and the genitive (different length)—fall out from the model: He assumes that partitives contain analytic morphology and therefore the length of vowel and consonant are not changed, whereas genitives are phonologically not related to their nominative forms, but contain non-analytic morphology (as defined by Kaye 1995).

Other observations (e.g., there are no fortis onsets in string initial position or in *libby*-type roots) can be shown to fall out from the model as well. Even the often-debated domain-final half-long vowel of Estonian is resolved as being a long but unstressed nucleus. At the end a very short subsection is devoted to morphology, but a detailed discussion is postponed to the next chapter.

That next chapter, Chapter 5 (*Analytic morphology*) indeed goes deeper into morphological territory. The first subsection, however, is a mere repetition of the superficial contents of the previous chapter’s last subsection, which seems a bit unnecessary.

Like in Standard GP, there are two possibilities for morphology: it can either be visible to phonology or not. The invisible (non-analytic) kind we already met with in chapter 4. For the analytic kind, MAP introduces *tconcat()*, a function that concatenates trees, similar to Kaye’s (1995) *concat()*. The function *tconcat()* can lead to trees that are not well formed for the language at stake; therefore a reorganization of the tree might become necessary. This is exemplified by Estonian/English examples.

Again, the many similarities and few differences between English and Estonian are pointed out. To expand the model even further, it is then applied to a third language: Italian. In fact, Italian exploits certain possibilities that were predicted by the model but found in neither English nor Estonian: in English, the final nucleus of *bid*-structures is always empty, in Estonian it may be filled by morphology, and in Italian it must be filled lexically. We find that there are different structures for geminates and fortis consonants. Conditions on structures and the structure of words of the type *fato/fatto* are worked out in some detail, but MAP remarks that more work is definitely needed here.

The final chapter of this dissertation, Chapter 6 (*Clusters*), introduces clusters formerly known as coda-onset clusters. Other types of clusters are not mentioned at all. Clusters exploit a structural configuration not introduced so far: for the distinction of *bee*-, *bid*-, and *libby*-structures, only the question of what constituent occupies the topmost right complement of the nuclear head of the domain (β in Figure 1 above) was of interest. This chapter introduces structures in which α is filled with an O-type. Restrictions concerning this are discussed and connected to coda licensing in GP. The strange behaviour of **A** is underlined once more by it (an element) posing restrictions on structure as well.

The infamous [s]-C-clusters pose a yet unresolved problem. Due to their structure, they are expected to pair up with [r]-C- and [l]-C-clusters, but contrary to these, the second consonant can never be lenis in English [s]-C clusters.

Length is also considered, and—not unexpectedly—we find the same alternations as before: there is length-alternation in *bid*-types, but not so in *libby*-types.

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If I could criticise only one point of this dissertation, it would be its overall structure. It undoubtedly makes an interesting read; it is even a page-turner at times, with one climax following the other and often unexpected twists and turns. However, this is not a novel. Being the seminal work in this theory, it has to act as a guide for those who wish to use and expand this model. Finding certain data rapidly is therefore crucial, but not always given. For instance, it does not seem very logical to find the data on Italian (monomorphemic forms) in the chapter on analytic morphology.

I have to add immediately that the style of writing is very clear, easy to follow. Readers are led through unfamiliar tree structures step by step, and trees and other figures are conveniently repeated whenever needed. This might mislead the reader to think this is a light read, although its contents are far from easy to digest.

Other points of critique are minor: Although the question of overgeneration has been an issue for very long, the way numbers of possible phonological expressions are counted (in this dissertation's first chapter and elsewhere in the literature) is not correct. However, this is completely irrelevant to the point that GP still allows for more phonological expressions than are actually found in the world's languages, and that a reduction of elements is one way of solving this problem.

In (62) on p. 190 x_2 is m-commanded by xO_5 , giving us a long [d:] in [jud:u]. However, I don't quite understand why xN_6 could not license it, as it is a closer licensor. We would then expect [judu:].

I understand that reorganizing trees parallels the loss of an empty R next to an empty O after *concat()* in GP—to fulfil the OCP but against the projection principle. As MAP points out, reorganization, just like *tconcat()*, is not a phonological process per se. “It is an auxiliary operation that ‘mops up’ a representation once *tconcat()* has done its job” (p. 228). It remains a mystery, however, where *tconcat()* and reorganization belong—whether they are a part of morphology or to be situated between modules (Scheer 2006). Both ideas open up a host of questions, and while I understand that a discussion would lead too far off topic, acknowledging the problem would be desirable.

As Harris (1994) points out, such a new model cannot be a full replacement for the old one right away:

“Suppose, however, that an alternative model becomes available [...]. As it is developed, the new theory may show signs of under-generation. That is, [...] it may [...] fail to account for sets of data which its predecessor was able to handle quite comfortably. At this point, there may be some temptation to fall back on the earlier theory and carry on with attempts to reform it. Alternatively, the researcher can persevere with the new model and earmark those areas where it seems to under-generate as problems for further research.”

(Harris 1994, 11)

In accordance with this, MAP's dissertation contains the outline of a new model, but it also marks certain areas to be worked out more clearly.

This dissertation is recommended to everyone interested in the theoretical aspects of language, especially phonology. Due to its clear style, it is also accessible to students of phonology. A background in Government Phonology can come in handy to appreciate the problems listed in chapters 1 and 2. Though later chapters also refer to principles of GP, a deep knowledge is not necessary there.

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References

- Bachmaier, Reinhard 2006. Spuren dezentrierter Segmente. Diplomarbeit, Universität Wien.
- Harris, John 1990. Segmental complexity and phonological government. In: *Phonology* 7: 255–301.
- Harris, John 1994. *English sound structure*. Blackwell, Oxford & Cambridge MA.
- Jensen, Sean 1994. Is ʔ an element? Towards a non-segmental phonology. In: *SOAS Working Papers in Linguistics & Phonetics* 4: 71–8.
- Jensen, Sean – Jonathan Kaye – Markus Pöchtrager – Sašo Živanonvić 2009. GP 2.0 and Putonghua too. Paper presented at the Government Phonology Round Table (25 April 2009), Piliscsaba, Hungary.
- Kaye, Jonathan 1995. Derivations and interfaces. In: Jacques Durand – Francis Katamba (eds): *Frontiers of phonology: Atoms, structures, derivations*. 289–332. Longman, London.
- Kaye, Jonathan 2000. A user's guide to Government Phonology (GP). Unpublished manuscript. (Downloadable from <http://www.unice.fr/dsl/tobweb/gppapers.htm>)
- Kaye, Jonathan – Jean Lowenstamm – Jean-Roger Vergnaud 1985. The internal structure of phonological elements: A theory of charm and government. In: *Phonology Yearbook* 2: 305–28.
- Kaye, Jonathan – Jean Lowenstamm – Jean-Roger Vergnaud 1990. Constituent structure and government in phonology. In: *Phonology* 7: 193–231.
- Kaye, Jonathan – Markus Pöchtrager 2005. *Big Tree Phonology*. Course at the EGG Summer School, Wrocław.
- Kaye, Jonathan – Markus A. Pöchtrager 2009. GP 2.0. Paper presented at the Government Phonology Round Table (25 April 2009), Piliscsaba, Hungary.
- Scheer, Tobias 2006. How non-phonological information is processed in phonology—a historical survey from Trubetzkoy to OT and Distributed Morphology. Course at the EGG Summer School, Olomouc. <http://tinyurl.com/3nfg7wd>
- Živanonvić, Sašo – Markus Pöchtrager 2010. GP 2, and Putonghua too. In: *Acta Linguistica Hungarica* 57: 357–380.