
This volume consists of 38 papers presented at the summer 2000 meeting of the International Clinical Phonetics and Linguistics Association, hosted by Queen Margaret University College, Edinburgh. The scope of the collection is ambitious in many respects. All levels of linguistic analysis are covered, from pragmatics through to acoustics, although approximately two thirds of the papers deal with phonology and phonetics. The full range of ages is represented, from a paper by John Locke on the functions of infant babbling through to Jacqueline Guendozi and Nicole Muller’s paper on repair strategies in the conversation of an elderly subject with Alzheimer disease. The majority of the papers consider developmental and acquired disorders, although a few consider normal and bilingual language development. Although English is the most frequently studied language, data from Arabic, Greek, Korean, Portuguese, Putonghua, Swedish, and several other languages are also featured. The editors are justly proud of the international feel to the research, with contributors working on five continents.

The five papers on specific language impairment (SLI) illustrate the wide-ranging nature of the work presented in this volume. Of the five, one considers syntax, two morphology, one semantics, and one phonology. Data are from Greek, Norwegian, French, German, and English, and a number of different theoretical positions are defended. Stavroula Stavrakaki’s paper on sentence comprehension in Greek SLI children presents evidence that these children find certain syntactic constructions (simple active sentences with clitics, long-distance who-object questions and passive sentences) particularly difficult in comparison to their language-matched controls. Stavrakaki claims that the nature of the deficit is syntactic and that the noninterpretable features of grammar are specifically affected (in the sense of the Minimalist Program, Chomsky, 1998). Kirsten Meyer Bjerkan defends the view that the deficit in SLI is not language specific but rather results from a limitation on general processing capacity. Her paper looks at the influence of phonological and frequency factors on regular and irregular past tense acquisition in Norwegian. She argues that Norwegian SLI children have difficulty in perceiving past tense morphemes with low perceptual salience and that they are only able to focus on frequency factors, as these are the most prominent aspect of the inflectional system. Christelle Maillart and Marie-Anne Schelstraete look at the effect of manipulating memory load, specifically, the order, number, and nature of the elements held in working memory, during comprehension tasks in French. They find that increasing the
load on working memory leads to a significant drop in comprehension performance. They argue that the burden on working memory interacts with performance in a manner that cannot be accounted for by any linguistic explanation of the deficit in SLI but that is predicted by a more general processing capacity limitation.

Petra Schulz, Zvi Penner, and Karin Wymann look at the comprehension of German resultative verbs in normally developing and language-impaired children and find that their SLI subjects lag behind their normally developing peers in accepting an endstate interpretation of end-state oriented verbs such as aufmachen. They interpret this finding as indicating that the SLI children’s learning strategy does not consider the hierarchy of subevents that is required for the correct interpretation of such verbs, so they cannot build up complete semantic representations of them. The final paper on SLI is by Kristine Yont, Adele Miccio, and Lynne Hewitt, who consider phonological breakdowns in SLI. The authors remark that, although most studies of phonology assess the performance of SLI subjects on single-word naming tasks, phonological errors also occur above the word level. They provide examples of between-word harmony and reduplication gathered from connected speech, and use these to argue for the assessment of phonological skills using conversational speech sampling. Although the papers on SLI differ in the rigour of their presentation, they represent a cross section of the variety of interpretations for this notoriously heterogeneous disorder.

Among the papers that address phonology, the one I found the most interesting employs insight gained from linguistic theory to devise successful therapy. Raquel Anderson uses the notion of markedness to show that when Spanish onset clusters that are highly marked for sonority are targeted for intervention, relatively less marked structures improve without direct targeting: They are remedied for free, as it were. This is exactly what good linguistic theory should do: It should inform therapy. The reverse is also true: successful therapy should inform our linguistic theories, and this paper gives support to the validity of markedness as a theoretical construct. A paper by Haruko Miyakoda considers the influence of syllable structure and orthography on speech errors in Japanese. Other papers in this collection would have benefited from Anderson and Miyakoda’s rigorous use of linguistic theory as a framework for their research.

Toward the phonetics end of the collection, Fiona Gibbon argues for the use of phonetic analysis in providing an accurate description of children’s phonological disorders. She uses various types of evidence to claim that impaired tongue movements (as revealed by electropalatography) are more widespread than evidence based solely on transcription-based analyses might suggest. The interface between phonetics and phonology is likely to be particularly fruitful in future research on phonological disorders. Also in the area of phonetics, Tara Whitehill and Joyce Chun offer a very clear methodology for rating intelligibility and acceptability in speakers with cleft palate.

As is inevitable with collections of this sort, the quality of the contributions is mixed, but there should be something of interest to anyone who is carrying out research in the field of clinical linguistics and phonetics. The papers are, on the whole, well written and clearly presented, despite the occasional error
missed in the editorial process. The length of each paper is generally a very manageable 10 to 15 pages, and there are good author and subject indexes. It is a pity that the papers are not formally grouped into topics of interest, such as SLI or bilingual development. Such a grouping would enable readers to find at a glance the contributions that are relevant to them. If grouped in this way, a short overview of each section would give coherence and would be particularly valuable for topics outside the reader’s own area of expertise. Although the breadth of the collection is one of its strengths, its lack of organization is a weakness. Overall, though, there is much that is worth reading here.

REFERENCE

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The timing of this book is perfect. Optimality theory (OT; Prince & Smolensky, 1993) has been a popular framework for phonological exploration since its conception. This is not to say that it has been embraced by everyone working in the field. Rather, it has generated a great deal of intellectual debate and research, creating a sense of revitalization in the field of phonology.

The author explains the basic properties of OT and couches the framework within linguistic theory as a whole. As a result, the movement from earlier theories, such as sound pattern of English (Chomsky & Halle, 1968) and aspects (Chomsky, 1965), toward a constraint-based theory is nicely captured. Although OT has its roots in phonology, McCarthy provides examples from both phonological and syntactical theory throughout the book. This serves to illustrate the applicability of the OT framework across linguistic domains.

This is not a textbook. Instead, it is a reference and guide for the theory. A basic understanding of OT is suggested (although not required) in order to benefit the most from this book. It is highly structured and points to a number of available works within the theory. The structure at first is distracting with pointers to references, sections, and notes, which are all denoted by their own unique symbols. However, the pointers do prove to be useful. The Frequently Asked Questions at the end of the book are also useful, as is the advice provided in the “How to Use this Book” section. Most importantly, this book clearly explains the assumptions behind OT and the basic architecture of the framework. Additionally, the possible inadequacies of the framework are also presented, such as opacity, with pointers to extensions of OT that attempt to account for these problems.

The basic premises and architecture of OT are presented in the first chapter, along with a discussion of the nature of constraints and how they interact
through constraint ranking. The author suggests that people who are new to OT should skip this chapter and instead follow the suggestions provided in the “How To” guide at the beginning of the book. Personally, I think it is best for the first time OT reader to skim this chapter and then follow the author’s suggestions.

Chapter 1 is crucial for understanding how the framework operates. It jumps into the theory by discussing how candidates are compared and introduces the concepts of strict domination, optimal outputs, and mark cancellation. I would have preferred a more general introduction to the theory in which the components and the rationale for the basic assumptions are presented prior to the nuts and bolts of the theory. However, it is crucial to understand how these properties work. The chapter then goes on to explain the main components of OT: constraint ranking, evaluation (EVAL), and candidate generalization (GEN). To date, this is one of the clearer presentations of how these components function.

The next main section brings to the table the theory of constraints and introduces universality of constraints (CON). This is an important aspect of the theory because it yields the notion of factorial typology. If there is a universal set of constraints, then the ranking of any particular set of constraints has strong implications for possible human languages. This, however, does not mean that every combination of constraints will necessarily result in a language. Rather, there will be cases where constraints are never in conflict, and so their ranking with respect to one another is of no consequence. Moreover, there is also the possibility of fixed hierarchies within CON. Nonetheless, positing a new constraint does have consequences for the theory because all languages will have this constraint somewhere in the grammar. It may simply be the case that it is so low in the ranking that it has no influence on the selection of output candidates. Exploring these issues, along with the discussion on constraints and their interaction, is highly useful and provides a clear explanation of OT’s premises. The final selection of the chapter is particularly useful for students and newcomers to the theory as it provides a guide for working within the OT framework.

Chapter 2 explains the emergence of OT within linguistic theory, mainly in the area of phonology. It discusses its similarities and differences to other linguistic theories. Syntactic theory and phonological theory are compared and contrasted in a way that helps one envision how the OT framework can operate in both domains. This is a concise historical account of the field and the movement toward a purely constraint-based theory. If the reader is not particularly familiar with formal linguistics, this is a good chapter in which to familiarize oneself with generative theory.

The third chapter is central to the book. In this chapter, the author discusses the consequences of OT as a result of its particular properties rather than the specific linguistic phenomena. It is divided into three main sections: markedness and faithfulness constraint interaction, constraint violability, and globality and parallelism. This is a dense chapter with a lot of theoretical discussion. It is again a very important chapter for understanding OT. Moreover, it is clearly elucidated and, at times, witty.

The chapter first begins with explaining the mapping from a linguistic input
to an output. The input (similar to an underlying representation) is fed into GEN. The term does not refer to an input from the language as it is traditionally used in other theories or fields. GEN generates a set of possible output candidates to be evaluated (EVAL) by the language-specific constraint hierarchy. The candidate that is most harmonic (best satisfies the constraint ranking) is selected as the winner. This mapping from input to output is either faithful (abc → abc) or unfaithful (abc → adc). A great deal of detail about ranking conditions of constraints that result in the mapping between inputs and outputs is in this section.

Also included in this chapter are discussions of concepts such as Richness of the Base, which states that there are no restrictions on the input and no generalizations about the lexicon (among other things). Essentially, all generalizations must be derived through the interaction of markedness (which evaluates the form of output candidates with preferences for certain structures) and faithfulness (which evaluates the form of output candidates with respect to the input) constraints.

Chapter 3 covers a lot of territory by touching on all the crucial elements of the framework. The final sections address the consequences of a framework that allows all constraints to be violable, as well as the consequences of globality (all inputs are evaluated by the same constraint hierarchy) and parallelism (one direct mapping from input to output). This discussion then turns to the current adaptations of the framework that attempt to rectify some of these consequences.

Having a basic understanding of OT helps with this chapter. It is good in the sense that all the issues, consequences, assumptions, and basic architecture are in one place, but as a result, the chapter is extremely dense.

The goal of the final chapter is to connect OT with other areas of research. In particular, it further explores its application to syntactic theory, touches on learnability and acquisition, discusses functionalism, and, finally, looks at variation and change. I found this chapter to be a bit thin, but the author provides extensive references for work in these areas. The section on learnability and acquisition is particularly disappointing because there has been a great deal of research within OT in these areas. However, the overall goal of this research survey is to provide a review of the current line of inquiry in the field, and with this focus in mind, placing emphasis on chapters 1 and 3 is understandable.

As a review of current linguistic research, McCarthy succeeds with a clear, user-friendly guide to OT. The book’s shortcomings are the result of trying to cover both the historical evolution of phonological (and syntactic) theory as well as trying to point to research within the framework outside of these domains. However, the extensive references are helpful in pointing the reader to a wide range of research, and helps to resolve this particular criticism. Chapters 1 and 3 are excellent and are indispensable for people interested in working within or evaluating the framework.

REFERENCES
Phonology is usually explained as the study of speech sounds and their patterns and functions in the lexical representation of speakers of languages (Kenstowicz, 1994; Spencer, 1996). Some years ago the question, “Where’s phonology?” was raised by Macken (1992) in the context of the large concern with the phonetics of acquisition and the conception of phonological acquisition as acquisition of phonetics. This division between phonology and phonetics may be traced to the work of the Prague School of Trubetzkoy (1939/1969) and earlier. Macken proposed a relatively autonomous phonological component, with perceptual, articulatory, and phonological-based abstract rules and principles, to account for learners’ lexical representation and suggested a hierarchy of prosodic words, segments, and features as the basis of phonological acquisition (Macken, 1979, 1992). Recent emphasis is on the interaction among phonology, phonetics, and psychology, and this integrative approach has implications for studying common crosslinguistic speech sound patterns (Ohala, 1999). Phonology is further seen as addressing the questions of rules and representations, which may apply to “compute the phonetic representation” within the framework of universal grammar (Kenstowicz, 1994, p. 10).


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It is within this larger framework that the important volume, *Phonological Development in Specific Contexts: Studies of Chinese-speaking children*, should be read. The book is significant for several reasons. One is that it addresses normal phonological development and disorder in young Putonghua- or Mandarin-speaking Chinese children. The other reason is that the theoretical questions and discussions of phonological acquisition in Putonghua Chinese are supported by careful empirical and case studies. There is a cross-sectional study involving 129 normally developing, Putonghua-speaking children; a developmental study of 4 children; and case studies of the structure and phonological systems of Putonghua-speaking children with functional speech disorders, a twin pair, and a child with severe prelingual hearing impairment. This impressive array of different, interrelated studies, one supporting the other, reinforces the overall argument. There is yet another reason for the very distinctive and almost unique contribution of this volume. Although there are studies of the acquisition of the suprasegmental tier of Mandarin tones (Lee, Vakoch, & Wurm, 1996; Li & Thompson, 1977), there is a paucity of systematic empirical and clinical studies of phonological systems of Chinese children speaking Putonghua, the national language, and Cantonese, the dialect used by a large number of southern Chi-
The exception is the systematic investigation by the Newcastle-upon-Tyne research team of Barbara Dodd, Wei Li, and their colleagues (e.g., Dodd & So, 1994; Holm & Dodd, 1999; So & Dodd, 1995). For all these and other reasons, the present volume adds greatly to the research and clinical literature.

In nine clearly written chapters, the author takes her readers through phonological development and impairment, with particular emphasis on Putonghua-speaking children. Chapter 1 succinctly sets the scene of universal language mechanisms and crosslinguistic studies. The key questions are the characteristics and trajectory of the development of phonological system of Chinese children with atypical phonological development and attempts to understand the underlying causes of phonological impairment for intervention. The classification of phonological disorder into those children with delayed development, consistent disorder, and inconsistent disorder (see Dodd, 1995) is suggested as a useful theoretical and practical framework. Chapter 2 is a brief account of Putonghua phonology, beginning with the syllable, then going through the segmental consonants and vowels and the suprasegmental tones, with a brief description of the difference between tones and segments from autosegmental theory. Table 2.13 on page 44 is a useful synopsis of the similarities and differences between Putonghua and English phonology. This short chapter is a good exposition with current concepts and can be read along with the monumental and comprehensive *A Grammar of Spoken Chinese* by the noted linguist Yuen Ren Chao (1968).

In the next six chapters, running 127 pages, the author provides details of her cross-sectional, developmental, and case studies. Of these six chapters, chapters 3, 4, and 5 (comprising 85 pages), on the phonological acquisition of normally developing Putonghua-speaking children, provide the tour de force of the theory and supporting data. Chapter 3 is a cross-sectional study of 134 nursery children (but shown as 129 on p. 45) between the ages of 1;6 and 4;6 with a careful balance of boys and girls. The aim was to examine the emergence and stabilization of phonemes and error patterns of speech samples from picture-description and picture-naming tasks. The early emergence of suprasegmental tones, discussed in one short paragraph, confirms findings from such studies as those by Li and Thompson (1977) and Gandour (1978). In the next chapter (chapter 4) the author provides considerable details on the perceptual cues to discriminate between the acoustically more confusing rising Tone 2 from the going Tone 3 and suggests reasons for this confusion to persist to later stages of tone acquisition by Mandarin-speaking children, as found by Li and Thompson (1977). For the segmental system, the cross-sectional data show the progression from syllable-final consonants and vowels and syllable-initial consonants. Table 3.8, on pages 60–61, and the subsequent summary capture the essence of error patterns of syllable–final consonants. The “syllable-based, language-specific notion of phonological saliency” (p. 71) advanced by the author explains the early emergence of tones because of the lexical meanings conveyed by tones, and this saliency is followed by vowels and syllable-final consonants. The interaction between phonological acquisition and lexical development perhaps deserve greater treatment because current psychological literature shows the potent role of lexical structuring and restructuring in children’s phonological development.

Chapter 4 is a detailed account of a developmental study of 4 children be-
tween 10 months and 2 years of age and adds to the findings of chapter 3. The summary of early studies is relevant and the discussion of the suprasegmental feature of tone sandhi, stress, and tonal errors elaborates the main findings of the earlier chapter. In particular, the hypotheses advanced to explain the earlier emergence of suprasegmental tones than segmental features point to areas of further research. Chapter 5, on the phonological system of 48 (a number of 33 is given elsewhere) children between the ages of 2;8 and 7;6 with speech disorders with no known organic causes, is another detailed exposition of painstaking data analyses of phonetic transcription of speech samples from picture-description and picture-naming tasks. As in the earlier chapters, the tables show quantitative and qualitative data of subgroups of speech disorders in terms of articulation, delayed development, and consistent and inconsistent disorder, and the figures add to the interpretation. The results suggest the co-occurrence of articulation and phonological disorders and a very large subgroup with delayed phonological development. As in the earlier chapters, the discussion is thorough and points to the persistence of phonological errors, their variability, and the rather restricted phonemic and phonetic inventories of speech-disordered children. Although cognizant of some surface error characteristics in different languages, the author is also emphatic that there are error patterns specific to particular language systems.

The next three chapters focus on the changes in developmental patterns of phonological impairment in Putonghua-speaking children in different subgroups of speech disorders (chapter 6), the phonological systems of a twin pair (chapter 7), and the phonological development of a prelingual hearing-impaired Putonghua-speaking child (chapter 8). The profiles of all the 7 individual children with speech disorders studied in detail in chapter 6 describe their surface phonetic features and phonemic inventories. In particular, the phonemic grids of Child G show inconsistent speech productions over several trials. The loss of systematic phonemic contrasts is explained by the author as good examples of recidivism, as observed by Smith (1973). The patterns of phonological development in the different subgroups, particularly for those with inconsistent errors, need early and systematic habilitation to establish consistent phonological production. The report (chapter 7) on the 6-year-old monozygotic twins’ phonological systems in terms of single words from picture naming, connected speech, and child–adult interaction provides suggestive evidence of delayed and disordered phonological development and needs to be followed up. The author’s statements that the nature of the learning situation of twin pairs may play an “important causal role” in their phonological development and that previous research has not shown “reliable associations between biological factors and speech disorder in twins” (p. 158) may be too strong. We should take note of recent advances on the heritability of language and genetic factors that affect written language versus spoken language (see Stromswold, 2001, for a detailed meta-analysis). Chapter 8 is a short chapter that discusses the developmental patterns of the phonological system of a Putonghua-speaking child with severe prelingual hearing loss from the assessment based on a number of linguistic measures such as mean length of utterance, error patterns, and phonetic and
phonemic inventories. The author draws some crosslinguistic comparisons and highlights the effect of hearing impairment on phonological acquisition.

Chapter 9 summarizes the whole volume and points to future research directions. This chapter may be the first chapter to read to get a clear sense of the content of the book and also the last one for consolidation of the various ideas and data sets. This important volume is theory based, and the research questions raised are supported by cross-sectional and developmental data and careful case studies within the broad framework of crosslinguistic similarities and differences. The systematic treatment of suprasegmental tones, the examination of the segmental elements of consonants and vowels in rather heterogeneous subgroups of Putonghua-speaking children, and the detailed analyses of these children’s phonological systems are exemplary. The book is both an important reference and resource material for researchers and senior students in speech and language sciences and pathology, clinical psychology, and related disciplines. It is a work that we should “read, mark, learn, and inwardly digest.”

REFERENCES

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