

John J. McCarthy, *A Thematic Guide to Optimality Theory*
 Cambridge: Cambridge University Press, 2002. xiv+317 pp.

Reviewed by Hisao Tokizaki, Sapporo University*

This book is published as one of a series called Research Surveys in Linguistics, the goal of which is to offer advanced students and researchers an efficient overview and entry into the primary literature. A particular reader the author has kept in mind is “the graduate student who has finished a semester or two of coursework, has seen some applications of OT [Optimality Theory], and is looking for help in putting it all together” (p. xii). As the title indicates, this book is a guide to a *theory* of linguistics, not to one particular area of linguistics. It includes well-balanced examples from phonology, morphology, syntax, and their interfaces. It also reviews OT’s implications for other areas such as first- and second-language acquisition, historical linguistics, and sociolinguistics.

This book consists of four chapters, two appendixes, references, and four indexes. The author illustrates the diverse topics that have been studied by numerous researchers. Readers should consult the book in review for more information about the relevant work that has been carried out.

Chapter 1 “The Core of Optimality Theory” is a concise introduction to the central premises of OT. The author first describes the overall structure of OT proposed

* I have benefited from another review of the book written by Marina Tzakosta, which appeared in *Linguist List*, Issue 13.1190, 2002. I am grateful to William John Jones for stylistic improvements. All remaining errors and inadequacies are, of course, my own.

by Prince and Smolensky (1993). Some basic notions such as candidate comparison and constraint ranking are explained with tableaux. The nature of the main components of OT, EVAL and GEN, is also discussed. The author explains the null hypothesis that all constraints are universal and universally present in the grammars of all languages. Universal constraints and language-particular ranking yield a factorial typology. The author tries to clarify the notion by an analogy (p. 12):

Imagine a mode of psychotherapy based on the hypothesis that each type of human personality reflects a different prioritization of four universal desires (such as love, wealth, progeny, and power). Since these desires are universal and there are $4!=24$ different ways to rank them, there will be 24 distinct personality types. ... would you consider running for mayor if it meant giving up a better-paying but much less powerful job as a piano tuner, supposing that the choice had no effect either way on love and progeny?

Two types of constraint, faithfulness and markedness, are explained along with the early PARSE/FILL model. The author emphasizes that OT markedness, which is conflicting and multidimensional, is different from Praguian markedness. Following Prince and Smolensky (1993), the author also discusses the main kinds of constraint interaction: faithful/unfaithful mappings, homogeneity of target/heterogeneity of process, and blocking effects.

The most characteristic and valuable part of the chapter might be Section 1.4 “How to do OT.” Here readers can look at OT from the bottom up. The author shows how to make a valid ranking argument with exercises. For example, can we argue that Constraint B dominates Constraint C when the winning candidate satisfies

only B and the other candidate neither of them?

(1) Practice tableau

/in/	B	C
i. out1		*
ii. out2	*	*

(The answer is no.) He also explains comparative tableau (Prince 2000) which makes ranking arguments easier to develop and understand. This chapter includes some strategies for finding informative candidates and for eliminating uninformative ones. It also describes how to proceed from the encounter with a problematic candidate. The author warns readers that positing a new constraint should not be undertaken lightly because it can bring a cost in typology. He offers some heuristics for positing new constraints. One of them is to avoid slipping bits and pieces of EVAL into constraint definitions. Another is to proceed cautiously when importing background assumptions from other theories.

Chapter 2 “The Context of Optimality Theory” is aimed at showing the developments in generative phonology since 1960’s and the similarities and differences between OT and earlier theories. The author argues that OT has closer affinities to Natural Phonology (Stampe 1973) than to the *SPE* theory (Chomsky and Halle 1968) which is segmental, rule based, and derivational. Natural Phonology, like OT, recognizes a set of universal processes that can be suppressed on a language-particular basis. Three differences between Natural Phonology and OT are also discussed: (i) Natural Phonology has an operation to perform on an input configuration; (ii) Natural Phonology recognizes partial suppression or constrained application of a process; (iii) only OT has a class of faithful constraints.

The author argues that nonlinear phonology is important for OT in that it emphasizes constraints on representations such as the autosegmental Well-Formedness Condition, the metrical Clash Filter, and the Obligatory Contour Principle. He also argues that the most serious problem with nonlinear phonology is conspiracies, which constitute the single biggest influence on the emergence of OT. He also points out that the development in syntactic theory has also shifted from rules (the *Aspects* model, Chomsky 1965) to constraints (Principles and Parameters (P&P) approach). He outlines Harmony Theory (Smolensky 1993) as an important precursor to OT.

This second chapter is unique in its historical nature among introductory books on OT. It reminds me of Newmeyer's (1996) historical perspective on syntactic theory. Readers can get an overview of how OT emerged and how it became one of the main approaches to understanding phonology and syntax.

Chapter 3 "The Results of Optimality Theory" is the core of the book. The author shows in turn the consequences of markedness/faithfulness interaction, constraint violability, and globality and parallelism. I will review each of them with particular attention to the phenomena in English and Japanese.

Section 3.1 begins with a review of the basics of markedness/faithful interaction. Basic concepts such as inventory and richness of the base (ROTB) are explained with the Duplication Problem, which is shown to be solved in OT. The author shows some examples from English: English has no front rounded vowels (*ü, ö*), no complementizer in embedded questions (**I wonder who that he saw*), and no words beginning with the velar nasal *ŋ*. *Do*-support is shown as an OT analysis of distributional restrictions (Grimshaw 1997). The author explains homogeneity of target/heterogeneity of process with the constraint $*NC_{\sigma}$, which militates against consonant clusters of a nasal followed by a voiceless consonant. Consonant voicing in

Japanese (/sin-ta/ -> šinda ‘died’) is compared with oralization or deletion of nasal consonants in other languages. The ranking of constraints in Japanese is [[*NC̥, IDENT(nasal), MAX >> IDENT(voice)]. In English, the ranking [[IDENT(nasal), IDENT(voice), MAX >> *NC̥]] predicts the nasal voiceless stop cluster (e.g., *hamper*). To show that OT is inherently typological, the author cites Samek-Lodovici (1996)’s argument on null subjects in Italian and English. In Italian, null subjects occur only with topic antecedents. This within language variation can be explained in OT, but not with parameters which has no middle grounds.

In section 3.2, the author explores three main consequences of constraint violability: nonuniformity of structure, emergence of the unmarked (TETU), and extremism and economy. The proclitic status of function words in English is presented as an example of nonuniformity effects at the phonology/syntax interface. Violable constraints in OT such as ONSET are compared with parameters such as [\pm Onset] and default or last resort rules. The author argues that TETU gives OT a consistent account of defaults in phonology and syntax. He also argues that differences in extent of constraint violation are part and parcel of OT. He takes *Do*-support as an example. In (2) below, candidate (2a) is the winner, which satisfies OB-HD (obligatory heads) (cf. (2b)) and violates FULL-INT (full interpretation) minimally (cf. (2c)).

(2) OB-HD >> FULL-INT

	OB-HD	FULL-INT
a. \Rightarrow [_{CP} <i>wh do</i> _i [_{IP} DP <i>e</i> _i [_{VP} V <i>t</i>]]]		*
b. [_{CP} <i>wh e</i> [_{IP} DP <i>e</i> [_{VP} V <i>t</i>]]]	**	
c. [_{CP} <i>wh do</i> [_{IP} DP <i>do</i> [_{VP} V <i>t</i>]]]		**

In section 3.3, the author explains controversial aspects of OT, globality and

parallelism. He argues that OT differs in this respect from the *SPE/Aspects* model, which is serial and local. The consequences of parallelism are grouped into four overlapping categories: chicken-egg effects, top-down effects, remote interaction, and globality effects. The prosody of function words in English is taken as an example of top-down effect, because it depends on the larger context in which the word finds itself (Selkirk 1995). For example, monosyllabic function words (other than object pronouns) are stressed and consequently unreduced before an intonational break (e.g., *Who did you give the book tó?*), and they are otherwise reduced in normal speech (e.g., *I gave the book tŏ Bill.*). Hierarchical structure in prosody should be constructed top-down, and not from the bottom up. He also describes other architectures for OT, which dispense with globality or parallelism or both. Among these are harmonic serialism, cyclic evaluation, and modular architecture. The author shows how these variants try to solve the opacity issue, which challenges parallel OT.

Chapter 4 “The Connections of Optimality Theory” overviews applications of OT to areas other than phonology. In section 4.1, the author lays out some controversial questions in OT syntax. He discusses in detail how to obtain absolute ill-formedness (e.g., **What will Bill do eat?*) and optionality (e.g., *I think (that) the coat won't fit him.*). He examines some possible analyses such as the null parse and different inputs.

In section 4.2, the author reviews some OT work on formal learnability, on acquisition, and on their intersection. First, he illustrates a learning theory for constraint ranking developed by Tesar and Smolensky (1998). Their Recursive Constraint Demotion algorithm is described with real-life examples (e.g., **bnick* in English). The $[[M(arked) \gg F(aithful)]]$ initial ranking is shown as a solution to the subset problem: How can a learner discover this ranking from positive evidence alone? Alternative approaches to learnability in OT are also referred in the section “For Further

Reading.” The author discusses OT’s basic predictions about language acquisition such as continuity between child grammars and adult grammars. He argues that violability of constraints offers a better picture about language acquisition than process suppression in the Natural Phonology and parameter setting in the P&P approach. The emergence of the unmarked in second-language acquisition is exemplified by final devoicing. The process is latent in Japanese speakers but is suppressed when they attempt to pronounce English. Homogeneity of target/heterogeneity of process is also exemplified by acquisition data in Gita where a markedness constraint *COMPLEX-ONSET is satisfied in different ways depending on the composition of the cluster and its local context. Citing Smolensky (1996), he argues that richness of the base offers a line of attack on the comprehension/production dilemma in language acquisition, namely how comprehension can be so much better than production in early acquisition. He concludes that OT establishes a direct connection between acquisition and typology since the same markedness constraints are involved in both.

Section 4.3 focuses on the issue of computing the vast candidate set. The author argues that the winnowing the winners from the losers can be done in a ranking-independent way with collective harmonic bounding. In section 4.4, he argues that OT is well suited to accommodating a functional basis for formal grammar. Violable constraints, which themselves make up the formal grammar, model the tendencies toward ease of articulation and clarity of perception. He discusses proposals for including numerical weights in constraints (e.g., Kirchner’s (1998) theory of lenition) and for evaluating whole phonological systems (e.g., Dispersion Theory). Section 4.5 reviews some of the work on synchronic and diachronic variation in a language. The author argues that the idea of uniformly sampling total orderings from a partially ordered constraints offers precise formulations and predictions about synchronic

variation. An alternative approach, the continuous ranking scale, is also illustrated. The author argues that diachronic change in grammar is a reranking of constraints, which is constrained within a three-stage process. Two conflicting constraints in a fixed order at the first stage can be formally tied at the second, where variation will be observed. Finally, the reversed ranking is regularized.

Appendix A is “Frequently Asked Questions.” Questions are listed alphabetically according to the key word (e.g., *Are the candidates the same in all languages?*). Each answer offers a concise review of the book with cross-references to the relevant sections. Readers can gain a clear understanding of the main points of the book if they try to answer the questions by themselves. Appendix B lists standard symbols in OT, symbols used in this book, and abbreviations.

As this book is a research survey, I will now evaluate its presentational aspects, not the author’s own research.

The most striking characteristic of this book is that it is organized thematically, focusing on concepts and results rather than phenomena. This top-down approach is quite different from that found in introductory textbooks such as Archangeli and Langendoen (1997) and Kager (1999). This approach seems to be successful in helping readers to understand the core of OT in a straightforward manner.

The most attractive virtue of this book is that it is designed to be user-friendly. The author is a professor known to the students at his department for his inspiring and well-presented lectures. One of his characteristics is nicely reflected in this guidebook addressed to graduate students and professionals in linguistics and allied fields. First, the author gives readers some advice about how to read the book through in “How to Use This Book” (p. xii). He suggests that “[r]eaders who are interested in a specific topic can use the table of contents to head straight for the relevant section and then work

outward from there using the cross-references and the suggested readings.” (p. xi). He also suggests that “[r]eaders who have been puzzled or put off by certain aspects of OT might want to start with the list of frequently asked questions (the FAQs) at the back of the book.” These ways are indeed possible and are very promising because the author has given a lot of structure to the book. Each chapter is divided into small subsections like §3.1.2.3 with its title “Absolute Ill-Formedness.” All of these subsections are listed in the table of contents.

Second, the text frequently contains cross-references of the form § $x.y/n$, where x is the chapter, y the section, n the paragraph. Four kinds of copious indexes are appended at the end of the book: names, constraints, languages, and topics. Moreover, the last section of each chapter is “For Further Reading,” where references are grouped according to their topics. The author kindly limits the suggested readings to those which are readily available. This part is very helpful if you refer to the detailed “References” (48 pages long) at the end of the book. He notes that some articles are “Available on Rutgers Optimality Archive” and that some dissertations are “Published by Garland Press.” It should also be noted that the information is accurate, detailed, and up-dated.

The book is also readable in spite of the extensive discussion. Its analogies are humorous, which helps readers to understand the point in discussion. Concrete examples are helpful in assisting readers to follow the sometimes complicated ideas and notions in OT.

I believe that this book makes a considerable contribution to the field. There have been good books on how to do your own research in syntax, but not in phonology. Even after finishing a textbook, you cannot be confident in starting your own research. There are not enough researchers or teachers of whom students can ask phonological

questions, especially in Japan. This book may well fill the gap. Another purpose of this book seems to be to remove misunderstandings about OT. The author is very successful in doing this in the text and Frequently Asked Questions when dealing with misunderstandings.

However, as most “perfect guide” books are in fact not flawless, this book still leaves room for improvement. First, readers should notice that there are some errors, both significant and insignificant, some of which are due to the printers. The “Errata, Addenda, Etc.” for the book made by the author is available at the following website: <http://www-unix.oit.umass.edu/~jjmccart/errata.html>. The author’s web page and e-mail address is also provided on p. xii.

Second, it was indeed a great idea to write this guide in top-down fashion. Readers can understand the main ideas of OT quite straightforwardly. However, it is also true that the same phenomenon appears at various places in the book. For example, *Do*-support is discussed in §3.1.3 “Distributional Restrictions,” in §3.2.3 “Extremism and Economy,” and in §4.1.2 “Absolute Ill-Formedness.” Function words in English are discussed in §3.2.1 “Nonuniformity of Structure” and in §3.3.2.4 “Consequences of Parallelism II: Top-Down Effects.” Readers who are interested in a phenomenon need to use indexes to find the relevant sections.

Despite these reservations, we would like to welcome this book as a textbook or an adjunct to another textbook or a reference. In the “Epilogue,” the author admits that OT does not have all the answers, and addresses the question of where to go from here. As he concludes, the issues described in the book will supply much stimulus for future research. It should be noted that the author has also edited *Optimality Theory in Phonology: A Reader* (Blackwell, 2003). This collection of papers includes the important work referred in the *Thematic Guide*. The “Editor’s Note” and “Study and

Research Questions” which are added to each paper are very helpful. Referring to the *Reader* will surely deepen understanding of the *Thematic Guide*.

As is often the case with an exciting field of research, a good guidebook has already become old by the time it is published. It is greatly to be hoped that a revised and updated version of this book will appear in the not too distant future.

References

- Archangeli, Diana and D. Terence Langendoen (1997) *Optimality Theory: An Overview*. Oxford: Blackwell.
- Chomsky, Noam (1965) *Aspects of the Theory of Syntax*. Cambridge, MA: MIT Press.
- Chomsky, Noam and Morris Halle (1968) *The Sound Pattern of English*. New York: Harper & Row.
- Grimshaw, Jane (1997) “Projection, Heads, and Optimality,” *Linguistic Inquiry* 28, 373-422.
- Kager, René (1999) *Optimality Theory*. Cambridge: Cambridge University Press.
- Kirchner, Robert (1998) *An Effort-Based Approach to Consonant Lenition*. Doctoral dissertation. Los Angeles: University of California.
- Newmeyer, Frederick J. (1996) *Generative Linguistics: A Historical Perspective*. London and New York: Routledge.
- Prince, Alan (2000) “Comparative Tableaux,” Unpublished manuscript. New Brunswick, NJ: Rutgers University. [Available on Rutgers Optimality Archive.]
- Prince, Alan and Paul Smolensky (1993) “Optimality Theory: Constraint Interaction in Generative Grammar,” Report no. RuCCS-TR-2. New Brunswick, NJ: Rutgers University Center for Cognitive Science.
- Samek-Lodovici, Vieri (1996) *Constraints on Subjects: An Optimality Theoretic*

- Analysis*. Doctoral dissertation. New Brunswick, NJ: Rutgers University.
[Available on Rutgers Optimality Archive.]
- Selkirk, Elisabeth. (1995) "The Prosodic Structure of Function Words," in Jill Beckman, Laura Walsh Dickey, and Suzanne Urbanczyk (eds.) *Papers in Optimality Theory* (University of Massachusetts Occasional Papers 18). Amherst: GLSA [Graduate Linguistics Student Association], 439-469.
- Smolensky, Paul (1993) "Harmony, Markedness, and Phonological Activity," Handout from Rutgers Optimality Workshop I. New Brunswick, NJ: Rutgers University.
[Available on Rutgers Optimality Archive.]
- Smolensky, Paul (1996) "On the Comprehension/Production Dilemma in Child Language," *Linguistic Inquiry* 27, 720-731.
- Stampe, David (1973) *A Dissertation on Natural Phonology*. Doctoral dissertation. Chicago: University of Chicago. [Published by Garland Press, New York, 1979.]
- Tesar, Bruce and Paul Smolensky (1998) "Learnability in Optimality Theory," *Linguistic Inquiry* 29, 229-268.