## A PERFORMANCE THEORY OF ORDER AND CONSTITUENCY

.

....,

## JOHN A. HAWKINS

Department of Linguistics University of Southern California



## Contents

Acknowledgments         List of abbreviations         1       Introduction         1.1       A processing approach to syntax         1.2       Some proposed processing explanations for grammar         1.3       Some problems for processing explanations         1.4       The approach of the present book         1.5       Towards a theory of language universals         2       The grammaticalization of processing principles         2.1       How is a processing principle expressed in a grammar?         2.2       A theory of structural complexity         2.3       Complexity predictions for grammatical variation across languages         2.4       Structural Domains and their semantic correlates         3       Early immediate constituents         3.1       The basic idea         3.2       Some preliminary evidence for EIC         3.4       Defining and measuring EIC         3.5       EIC predictions for the grammar         3.6       EIC predictions for the grammar         3.7       EIC's predictions for typologically different structures         3.8       The relationship of EIC to other principles		Preface	<i>page</i> xi
<ol> <li>Introduction</li> <li>A processing approach to syntax</li> <li>Some proposed processing explanations for grammar</li> <li>Some problems for processing explanations</li> <li>The approach of the present book</li> <li>Towards a theory of language universals</li> <li>The grammaticalization of processing principles</li> <li>How is a processing principle expressed in a grammar?</li> <li>A theory of structural complexity</li> <li>Complexity predictions for grammatical variation across languages</li> <li>Structural Domains and their semantic correlates</li> <li>Early immediate constituents</li> <li>The basic idea</li> <li>Some preliminary evidence for EIC</li> <li>Defining and measuring EIC</li> <li>EIC predictions for the grammar</li> <li>FIC's predictions for typologically different structures</li> </ol>		Acknowledgments	xiv
<ul> <li>A processing approach to syntax</li> <li>Some proposed processing explanations for grammar</li> <li>Some problems for processing explanations</li> <li>The approach of the present book</li> <li>Towards a theory of language universals</li> <li>The grammaticalization of processing principles</li> <li>How is a processing principle expressed in a grammar?</li> <li>A theory of structural complexity</li> <li>Complexity predictions for grammatical variation across languages</li> <li>Structural Domains and their semantic correlates</li> <li>Early immediate constituents</li> <li>The basic idea</li> <li>Some preliminary evidence for EIC</li> <li>Defining and measuring EIC</li> <li>EIC predictions for the grammar</li> <li>EIC's predictions for typologically different structures</li> </ul>		List of abbreviations	xvii
<ul> <li>Some proposed processing explanations for grammar</li> <li>Some problems for processing explanations</li> <li>The approach of the present book</li> <li>Towards a theory of language universals</li> <li>The grammaticalization of processing principles</li> <li>How is a processing principle expressed in a grammar?</li> <li>A theory of structural complexity</li> <li>Complexity predictions for grammatical variation across languages</li> <li>Structural Domains and their semantic correlates</li> <li>Early immediate constituents</li> <li>The basic idea</li> <li>Some preliminary evidence for EIC</li> <li>Defining and measuring EIC</li> <li>EIC predictions for the grammar</li> <li>EIC s predictions for typologically different structures</li> </ul>	1	Introduction	1
<ul> <li>Some problems for processing explanations</li> <li>The approach of the present book</li> <li>Towards a theory of language universals</li> <li>The grammaticalization of processing principles</li> <li>How is a processing principle expressed in a grammar?</li> <li>A theory of structural complexity</li> <li>Complexity predictions for grammatical variation across languages</li> <li>Structural Domains and their semantic correlates</li> <li>Early immediate constituents</li> <li>The basic idea</li> <li>Some preliminary evidence for EIC</li> <li>Defining and measuring EIC</li> <li>EIC predictions for the grammar</li> <li>EIC's predictions for typologically different structures</li> </ul>	1.1	A processing approach to syntax	1
<ul> <li>1.4 The approach of the present book</li> <li>1.5 Towards a theory of language universals</li> <li>2 The grammaticalization of processing principles</li> <li>2.1 How is a processing principle expressed in a grammar?</li> <li>2.2 A theory of structural complexity</li> <li>2.3 Complexity predictions for grammatical variation across languages</li> <li>2.4 Structural Domains and their semantic correlates</li> <li>3 Early immediate constituents</li> <li>3.1 The basic idea</li> <li>3.2 Some principles of parsing</li> <li>3.3 Some preliminary evidence for EIC</li> <li>3.4 Defining and measuring EIC</li> <li>3.5 EIC predictions for the grammar</li> <li>3.7 EIC's predictions for typologically different structures</li> </ul>	1.2	Some proposed processing explanations for grammar	3
<ul> <li>1.5 Towards a theory of language universals</li> <li>2 The grammaticalization of processing principles</li> <li>2.1 How is a processing principle expressed in a grammar?</li> <li>2.2 A theory of structural complexity</li> <li>2.3 Complexity predictions for grammatical variation across languages</li> <li>2.4 Structural Domains and their semantic correlates</li> <li>3 Early immediate constituents</li> <li>3.1 The basic idea</li> <li>3.2 Some principles of parsing</li> <li>3.3 Some preliminary evidence for EIC</li> <li>3.4 Defining and measuring EIC</li> <li>3.5 EIC predictions for the grammar</li> <li>3.7 EIC's predictions for typologically different structures</li> </ul>	1.3	Some problems for processing explanations	7
<ul> <li>2 The grammaticalization of processing principles</li> <li>2.1 How is a processing principle expressed in a grammar?</li> <li>2.2 A theory of structural complexity</li> <li>2.3 Complexity predictions for grammatical variation across languages</li> <li>2.4 Structural Domains and their semantic correlates</li> <li>3 Early immediate constituents</li> <li>3.1 The basic idea</li> <li>3.2 Some principles of parsing</li> <li>3.3 Some preliminary evidence for EIC</li> <li>3.4 Defining and measuring EIC</li> <li>3.5 EIC predictions for the grammar</li> <li>3.6 EIC predictions for the grammar</li> <li>3.7 EIC's predictions for typologically different structures</li> </ul>	1.4	The approach of the present book	10
<ul> <li>2.1 How is a processing principle expressed in a grammar?</li> <li>2.2 A theory of structural complexity</li> <li>2.3 Complexity predictions for grammatical variation across languages</li> <li>2.4 Structural Domains and their semantic correlates</li> <li>3 Early immediate constituents</li> <li>3.1 The basic idea</li> <li>3.2 Some principles of parsing</li> <li>3.3 Some preliminary evidence for EIC</li> <li>3.4 Defining and measuring EIC</li> <li>3.5 EIC predictions for the grammar</li> <li>3.6 EIC predictions for the grammar</li> <li>3.7 EIC's predictions for typologically different structures</li> </ul>	1.5	Towards a theory of language universals	16
<ul> <li>2.1 How is a processing principle expressed in a grammar?</li> <li>2.2 A theory of structural complexity</li> <li>2.3 Complexity predictions for grammatical variation across languages</li> <li>2.4 Structural Domains and their semantic correlates</li> <li>3 Early immediate constituents</li> <li>3.1 The basic idea</li> <li>3.2 Some principles of parsing</li> <li>3.3 Some preliminary evidence for EIC</li> <li>3.4 Defining and measuring EIC</li> <li>3.5 EIC predictions for the grammar</li> <li>3.6 EIC predictions for the grammar</li> <li>3.7 EIC's predictions for typologically different structures</li> </ul>			
<ul> <li>A theory of structural complexity</li> <li>Complexity predictions for grammatical variation across languages</li> <li>Structural Domains and their semantic correlates</li> <li>Early immediate constituents</li> <li>The basic idea</li> <li>Some principles of parsing</li> <li>Some preliminary evidence for EIC</li> <li>Defining and measuring EIC</li> <li>EIC predictions for performance</li> <li>EIC predictions for the grammar</li> <li>EIC's predictions for typologically different structures</li> </ul>	2	The grammaticalization of processing principles	19
<ul> <li>2.3 Complexity predictions for grammatical variation across languages</li> <li>2.4 Structural Domains and their semantic correlates</li> <li>3 Early immediate constituents</li> <li>3.1 The basic idea</li> <li>3.2 Some principles of parsing</li> <li>3.3 Some preliminary evidence for EIC</li> <li>3.4 Defining and measuring EIC</li> <li>3.5 EIC predictions for performance</li> <li>3.6 EIC predictions for the grammar</li> <li>3.7 EIC's predictions for typologically different structures</li> </ul>	2.1	How is a processing principle expressed in a grammar?	19
languages2.4Structural Domains and their semantic correlates3Early immediate constituents3.1The basic idea3.2Some principles of parsing3.3Some preliminary evidence for EIC3.4Defining and measuring EIC3.5EIC predictions for performance3.6EIC predictions for the grammar3.7EIC's predictions for typologically different structures	2.2	A theory of structural complexity	24
<ul> <li>2.4 Structural Domains and their semantic correlates</li> <li>3 Early immediate constituents</li> <li>3.1 The basic idea</li> <li>3.2 Some principles of parsing</li> <li>3.3 Some preliminary evidence for EIC</li> <li>3.4 Defining and measuring EIC</li> <li>3.5 EIC predictions for performance</li> <li>3.6 EIC predictions for the grammar</li> <li>3.7 EIC's predictions for typologically different structures</li> </ul>	2.3	Complexity predictions for grammatical variation across	•
<ul> <li>3 Early immediate constituents</li> <li>3.1 The basic idea</li> <li>3.2 Some principles of parsing</li> <li>3.3 Some preliminary evidence for EIC</li> <li>3.4 Defining and measuring EIC</li> <li>3.5 EIC predictions for performance</li> <li>3.6 EIC predictions for the grammar</li> <li>3.7 EIC's predictions for typologically different structures</li> </ul>		languages	37
<ul> <li>3.1 The basic idea</li> <li>3.2 Some principles of parsing</li> <li>3.3 Some preliminary evidence for EIC</li> <li>3.4 Defining and measuring EIC</li> <li>3.5 EIC predictions for performance</li> <li>3.6 EIC predictions for the grammar</li> <li>3.7 EIC's predictions for typologically different structures</li> </ul>	2.4	Structural Domains and their semantic correlates	50
<ul> <li>3.2 Some principles of parsing</li> <li>3.3 Some preliminary evidence for EIC</li> <li>3.4 Defining and measuring EIC</li> <li>3.5 EIC predictions for performance</li> <li>3.6 EIC predictions for the grammar</li> <li>3.7 EIC's predictions for typologically different structures</li> </ul>	3	Early immediate constituents	57
<ul> <li>3.3 Some preliminary evidence for EIC</li> <li>3.4 Defining and measuring EIC</li> <li>3.5 EIC predictions for performance</li> <li>3.6 EIC predictions for the grammar</li> <li>3.7 EIC's predictions for typologically different structures</li> </ul>	3.1	The basic idea	57
<ul> <li>3.4 Defining and measuring EIC</li> <li>3.5 EIC predictions for performance</li> <li>3.6 EIC predictions for the grammar</li> <li>3.7 EIC's predictions for typologically different structures</li> </ul>	3.2	Some principles of parsing	58
<ul> <li>3.5 EIC predictions for performance</li> <li>3.6 EIC predictions for the grammar</li> <li>3.7 EIC's predictions for typologically different structures</li> </ul>	3.3	Some preliminary evidence for EIC	64
<ul> <li>3.6 EIC predictions for the grammar</li> <li>3.7 EIC's predictions for typologically different structures</li> </ul>	3.4	Defining and measuring EIC	69
3.7 EIC's predictions for typologically different structures	3.5	EIC predictions for performance	83
	3.6	EIC predictions for the grammar	95
3.8 The relationship of EIC to other principles	3.7	EIC's predictions for typologically different structures	102
	3.8	The relationship of EIC to other principles	106

9

## x Contents

4	Testing EIC's performance predictions	121
4.1	Arrangements of free word orders in multiple branching	
	structures	122
4.2	Binary branching structures	171
4.3	Rearrangements of basic word orders in performance	180
4.4	Comparing EIC with pragmatic predictions	214
4.5	Temporary ambiguity preferences	242
5	Testing EIC's grammatical predictions	250
5.1	Binary branching structures	251
5.2	Multiple branching structures	269
5.3	A look at English	282
5.4	Grammatical rearrangements	296
5.5	Word-order hierarchies	315
5.6	Left-right asymmetries	321
6	Grammaticalized node construction	342
6.1	The head of phrase generalization	343
6.2	Some additional construction principles	_ 359
6.3	Some predicted category and ordering alternations	380
7	Conclusions	409
7.1	Summary of the book	411
7.2	Major findings and further issues	423
	Envoi	440
	Notes	442
	References	470
	Index of names	483
	Index of languages	486
	Subject index	488

•

.