

Language Faculty Science

This book explores how we can aspire to accumulate knowledge about the language faculty in line with Feynman's "The test of all knowledge is experiment." The two pillars of the proposed methodology for language faculty science are the internalist approach advocated by Chomsky and what Feynman calls the "Guess-Compute-Compare" method. Taking the internalist approach, the book is concerned with the *I-language* of an *individual* speaker. Adopting the Guess-Compute-Compare method, it aims at deducing *definite* predictions and comparing them with experimental results. It offers a conceptual articulation of how we deduce *definite* predictions about the judgments of an *individual* speaker on the basis of universal and language-particular hypotheses and how we obtain experimental results precisely in accordance with such predictions. In pursuit of rigorous testability and reproducibility, the experimental demonstration in the book is supplemented by the accompanying website, which provides the details of all the Experiments discussed in the book.

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Preface

This book grew out of a concern addressed in my paper “Falsifiability and repeatability in generative grammar: A case study of anaphora and scope dependency in Japanese” (2003a) and the earlier paper “Null object and sloppy identity in Japanese” (1998a). The concern regards how we can evaluate proposals in our research so as to be able to secure and accumulate as much progress as possible. This concern is directly related to questions such as what our object of inquiry is, what counts as evidence for or against our hypotheses about our subject matter, whether and how we can deduce definite predictions from our hypotheses, how such predictions can be put to rigorous empirical test, and how we should interpret the results of our experiments.

The work subsequent to those papers led to the book manuscript *A foundation of generative grammar as an empirical science* (2009) and eventually to this book. In the meantime, the first template for the general design of the on-line experiments, to be discussed in this book, was developed in 2004. The template has undergone changes reflecting various stages of the methodological articulation that has led to the proposal to be laid out and illustrated in this book, and a number of on-line experiments have been conducted over the years. The empirical illustration of the proposed methodology for language faculty science in this book is based on some of those experiments, the details of which are available at the accompanying website (<http://www.gges.org/hojiCUP/>).

Concern with empirical rigor in research in linguistics has resulted in a recent explosion of experimental research; see the references in Schütze and Sprouse 2013 and other papers in Podesva and Sharma 2013. Such research – to the extent that it deals with informants – typically deals with a *group* of informants and analyzes the distribution of their reactions by statistical methods developed for, and utilized in, fields such as agricultural, social, and behavioral sciences. Many of the experiments to be discussed below also involve a large number of informants, as large as 200. But, for us, such a multiple-informant experiment is none other than a collection of single-informant experiments. Our predictions are

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about *individual* informants, not about a group of informants. They are *definite* predictions, not about a tendency or about a difference. Our experiments test our *definite* predictions about *individual* informants. One may wonder, quite understandably, whether and how it might be possible to deduce *definite* predictions about *individual* informants and obtain experimental results in accordance with such predictions. The following chapters address how.

In part because it took me so many years to complete this book, my indebtedness and gratitude go to so many people that I hardly know where to begin. I would like to thank all my friends and colleagues who have helped me and encouraged me over the years, personally and academically. I would especially like to express my gratitude to the late Yuki Kuroda for his inspiration, friendship, and encouragement, the late Jean Gerard for her personal inspiration since the early 1970s, the late Mike Brame and the late Sol Saporta for their encouragement during my years at University of Washington as a graduate student, and the late Tanya Reinhart for her inspirational works (although I never had the chance to discuss anything with her). I wish I could hear their reactions to the book.

Teru Fukaya, Kiyoko Kataoka, Emi Mukai, Yuki Takubo, and Ayumi Ueyama have commented on numerous versions of what is presented in this book. Without their help over the years and especially during the final months of its preparation, I would not have completed the book. The template for the general design of our on-line experiments is indispensable for the completion of this book in its current form. I am deeply indebted to Ayumi Ueyama for her generous help creating and improving the template.

Dave Lebeaux read a draft of each chapter of this book. I deeply appreciate his comments and encouragement. Daisuke Bekki, Yoshi Kitagawa, and Fritz Newmeyer commented on versions of the 2009 manuscript. Their comments have helped me proceed from the 2009 manuscript to this book. I am also grateful to Yasuaki Abe, Danny Fox, J.-R. Hayashishita, Yasuo Ishii, Shigehisa Karimata, Chris Kennedy, Satoshi Kinsui, Masa Koizumi, Takeo Kura Fuji, Jason Merchant, Asako Miyachi, Hiroki Narita, Yukio Otsu, Jennifer Smith, and Jon Sprouse for their comments and discussion on earlier works that dealt with some of the issues addressed in this book.

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I would like to thank the two anonymous CUP reviewers for their comments on an earlier version of this book. I thank Helen Barton, the CUP commissioning editor, for her encouragement since the inception of the idea of this book in the fall of 2010.

My mother Kimiyo Hoji and my sister Yuri Nagano have provided me with unconditional support. My wife Caroline Scherzer has provided me with the best working environment possible for my scientific pursuit. I cannot thank them enough for their support and sacrifice.

List of abbreviations

acc	accusative marker
CL	classifier
cm	case-marker
CS	Computational System
dat	dative marker
EPSA	Evaluation of Predicted Schematic Asymmetry
FD	Formal Dependency
gen	genitive marker
LG	Lexical group
nom	nominative marker
O	Object
OSV	Object Subject Verb
S	Subject
SG	Schema group
SOV	Subject Object Verb
SVO	Subject Verb Object
UG	Universal Grammar