

“On the goals of linguistic theory”: Revisiting Chomskyan theories in the era of AI

Eva Portelance

Department of Decision Sciences,
HEC Montréal

Mila - Quebec Artificial Intelligence Institute
eva.portelance@hec.ca

Masoud Jasbi

Department of Linguistics,
University of California - Davis
jasbi@ucdavis.edu

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Abstract

Theoretical linguistics seeks to explain *what* human language is, and *why*. Linguists and cognitive scientists have proposed different theoretical models of what language is, as well as cognitive factors that shape it, and allow humans to *produce*, *understand*, and *acquire* natural languages. However, humans may no longer be the only ones learning to *generate*, *parse*, and *learn* natural language: artificial intelligence (AI) models such as large language models are proving to have impressive linguistic capabilities. Many are thus questioning what role, if any, such models should play in helping theoretical linguistics reach its ultimate research goals? In this paper, we propose to answer this question, by reiterating the tenets of generative linguistics, a leading school of thought in the field, and by considering how AI models as theories of language relate to each of these important concepts. Specifically, we consider three foundational principles, finding roots in the early works of Noam Chomsky: (1) levels of theoretical adequacy; (2) procedures for linguistic theory development; (3) language learnability and Universal Grammar. In our discussions of each principle, we give special attention to two types of AI models: neural language models and neural grammar induction models. We will argue that such models, in particular neural grammar induction models, do have a role to play, but that this role is largely modulated by the stance one takes regarding each of these three guiding principles.

1 Introduction

One of the central goals of theoretical linguistics is to develop a theory of language which explains how we both *produce* and *understand* language, while also explaining how it is *acquired* by a learner. In other words, theoretical linguistics strive to develop an algorithmic explanation for how we *learn* and eventually *parse* and *generate* language. A central figure whose work helped define this goal is Noam Chomsky. Many

Goals Of Linguistic Theory

Noam Chomsky



Goals Of Linguistic Theory:

Goals of Linguistic Theory Stanley Peters,1972 **Goals of Linguistic Theory** Stanley Peters,1972 **Goals in Linguistic Theory, Edited by Stanley Peters** Paul Peters,1972 Syntax Robert D. Van Valin (Jr.),Randy J. LaPolla,1997-12-11 An introduction to syntactic theory and analysis The Goals of Linguistic Theory Revisited Roger C. Schank,Y. Wilks,1973 An examination is made of the original goals of generative linguistic theory It is suggested that these goals were well defined but misguided with respect to their avoidance of the problem of modeling performance With developments such as generative semantics it is no longer clear that the goals are clearly defined The authors argue that it is vital for linguistics to concern itself with the procedures that humans use in language They then introduce a number of basic human competencies in the field of language understanding understanding in context and the use of inferential information and argue that the modeling of these aspects of language understanding requires procedures of a sort that cannot be easily accommodated within the dominant paradigm In particular the report holds that the procedures that will be required in these cases ought to be linguistic and that a simple importation of techniques from logic may create a linguistics in which there cannot be procedures of the required sort Modified author abstract **Linguistic Theory** Robert-Alain De Beaugrande,2014-02-24 In *Linguistic Theory* Robert de Beaugrande analyses linguistic theories not as abstract ideas or theses but as the process and product of theoretical discourse He argues that the best documentation of this discourse can be found in the fundamental works of major linguists from Ferdinand de Saussure to Teun van Dijk and Walter Kintsch He therefore employs the highly unusual strategy of a close reading of these works as discourse performances and strives to uncover their main points and characteristic moves in the linguist's own words Through this approach the reader is able to appreciate and understand the variety and controversy among linguistic theories as they have emerged and developed in interaction with each other Special scrutiny is allocated to the issue of how far the active practice of the linguists followed their own theories and proposals and why The author concludes by assessing the prospects for linguistics to be drawn from the retrospect in the previous chapters **Linguistic Theory in America** Frederick Newmeyer,2023-07-24 *Linguistics: The Cambridge Survey: Volume 2, Linguistic Theory: Extensions and Implications* Frederick J. Newmeyer,1988-04-21

Linguistics The Cambridge Survey is a comprehensive introduction to prevalent research in all branches of the field of linguistics from syntactic theory to ethnography of speaking from signed language to the mental lexicon from language acquisition to discourse analysis Each chapter has been written by a specialist particularly distinguished in his or her field who has accepted the challenge of reviewing the current issues and future prospects in sufficient depth for the scholar and with sufficient clarity for the student Each volume can be read independently and has a particular focus Volume I covers the internal structure of the language faculty itself while Volume II considers the evidence for and the implications of a generativist approach to language Psycholinguistics and neurolinguistics are covered in Volume III and Volume IV

concentrates on sociolinguistics and the allied fields of anthropological linguistics and discourse and conversation analysis. Several of the chapters in the work concentrate on the interface between different aspects of linguistic theory or the boundaries between linguistic theory and other disciplines. Thus in both its scope and in its approach the Survey is a unique and fundamental work of reference. It undoubtedly fulfils the editor's principal aim of providing a wealth of information, insight and ideas that will excite and challenge all readers with an interest in linguistics.

Current Issues in Linguistic Theory Noam Chomsky, 2011-05-02. No detailed description available for Current Issues in Linguistic Theory.

Ideology and Linguistic Theory John A. Goldsmith, Geoffrey J. Huck, 2013-10-11. In *The Ideological Structure of Linguistic Theory*, Geoffrey J. Huck and John A. Goldsmith provide a revisionist account of the development of ideas about semantics in modern theories of language, focusing particularly on Chomsky's very public rift with the Generative Semanticists about the concept of Deep Structure.

Natural Language Parsing and Linguistic Theories U. Reyle, C. Rohrer, 2012-12-06. presupposition fails. We now give a short introduction into Unification Grammar. Since all implementations discussed in this volume use PROLOG with the exception of BlockjHaugeneder we felt that it would also be useful to explain the difference between unification in PROLOG and in UG. After the introduction to UG we briefly summarize the main arguments for using linguistic theories in natural language processing. We conclude with a short summary of the contributions to this volume.

UNIFICATION GRAMMAR 3: Feature Structures or Complex Categories Unification Grammar was developed by Martin Kay. Kay 1979. Martin Kay wanted to give a precise definition and implementation of the notion of feature. Linguists use features at nearly all levels of linguistic description. In phonetics, for instance, the phoneme *b* is usually described with the features bilabial, voiced and nasal. In the case of *b*, the first two features get the value *bilabial*, the third nasal gets the value *nasal*. Feature value pairs in phonology are normally represented as a matrix:

bilabial	voiced	nasal
<i>b</i>	<i>1</i>	<i>1</i>

Feature matrix for *b*. In syntax, features are used, for example, to distinguish different noun classes. The Latin noun *murus* would be characterized by the following feature value pairs: gender: masculine, number: singular, case: nominative, pred: *murus*. Besides a matrix representation, one frequently finds a graph representation for feature value pairs. The edges of the graph are labelled by features. The leaves denote the value of a feature.

Syntax, the brain, and linguistic theory: a critical reassessment, 2024-07-23. Syntax refers both to the structure of sentences and the underlying combinatorial capacity to generate this structure. For some time, neurolinguistic research on syntax was heavily influenced by theoretical linguistic approaches which characterize in detail the nature of syntactic representations. A rough consensus has been that the primary region supporting syntax is Broca's area and that syntactic deficits in aphasia exist primarily due to damage or degeneration of this region, commonly occurring in Broca's aphasia and nonfluent/agrammatic PPA. With respect to temporal dynamics of syntactic processing, neurophysiological research on syntax focused on specific event-related potentials such as the ELAN and P600, thought to index phrase structure building and syntactic reanalyses. However, the research landscape has changed substantially in the last several years with

new methodologies and theoretical perspectives and there is little consensus on the neurobiological foundations of syntax or the role of linguistic theory in guiding research The goal of this Research Topic is to reassess our understanding of syntax and the brain in light of these developments Specifically it is designed to address the following set of major questions

Evidence and Argumentation in Linguistics Thomas A. Perry, 2017-11-07 No detailed description available for Evidence and Argumentation in Linguistics *An Introduction to the Theory of Formal Languages and Automata* W. J. Levelt, 2019-03-18 No detailed description available for An Introduction to the Theory of Formal Languages and Automata

The Minimalist Program Fahad Rashed Al-Mutairi, 2014-10-16 The development of the Minimalist Program MP Noam Chomsky's most recent generative model of linguistics has been highly influential over the last twenty years It has had significant implications not only for the conduct of linguistic analysis itself but also for our understanding of the status of linguistics as a science The reflections and analyses in this book contain insights into the strengths and the weaknesses of the MP These include a clarification of the content of the Strong Minimalist Thesis SMT a synthesis of Chomsky's linguistic and interdisciplinary discourses and an analysis of the notion of optimal computation from conceptual empirical and philosophical perspectives This book will encourage graduate students and researchers in linguistics to reflect on the foundations of their discipline and the interdisciplinary nature of the topics explored will appeal to those studying biolinguistics neurolinguistics the philosophy of language and other related disciplines **Chomsky Notebook** Julie Franck, Jean Bricmont, 2010-01-08 Noam Chomsky applies a rational scientific approach to disciplines as diverse as linguistics ethics and politics His best known innovations involve a groundbreaking theory of generative grammar the revolution it initiated in cognitive science and a radical encounter with political theory and practice In Chomsky Notebook Cedric Boeckx and Norbert Hornstein tackle the evolution of Chomsky's linguistic theory Akeel Bilgrami revisits Chomsky's work on freedom and truth and Pierre Jacob analyzes his naturalism Chomsky's own contributions include an interview with Jean Bricmont and an essay each on Edward Said and the natural world Altogether these works reveal the penetrating insight of a remarkable intellectual whose thought extends into a number of fields within and outside of academia For the uninitiated reader and longtime fan this anthology attests to the power of Chomsky's rationalism and the dexterity of his critical investigations *Cognitive Semantics and Scientific Knowledge* András Kertész, 2004-01-01 The book focuses on the question of how and to what extent cognitive semantic approaches can contribute to the new field of the cognitive science of science The argumentation is based on a series of instructive case studies which are intended to test the prospects and limits of the metascientific application of both holistic and modular cognitive semantics The case studies show that while cognitive semantic research is able to solve problems which have traditionally been the domain of the philosophy of science it also encounters serious limits The prospects and the limits thus revealed suggest new research topics which in future can be tackled by cognitive semantic approaches to the cognitive science of science *Principles of Structural Linguistics*

Sebastian K. Saumjan, 2017-12-04 No detailed description available for Principles of Structural Linguistics Causality in Linguistic Theory Esa Itkonen, 1983 The author seeks to examine the methodological and philosophical status of non autonomous that is causal linguistics *Deconstructing Syntactic Theory* Peter W. Culicover, Giuseppe

Varaschin, 2025-05-28 *Deconstructing Syntactic Theory* is a critical examination of the assumptions and methodologies of contemporary derivational syntactic theory The study ranges from the earliest work inspired by Chomsky's Syntactic Structures and Aspects of the Theory of Syntax to the present day Minimalist Program The book begins with an examination of the relationship between syntactic structure linear order and meaning and the role of uniformity in motivating derivational analysis that assume movement and invisible structure A central property of such analyses is that they are cryptoconstructional construction specific stipulations are assumed in order to derive the form and meaning of expressions The second part looks at a range of technical and empirical problems of derivational syntax which require theoretical stipulations and devices to properly constrain cryptoconstructional analyses The focus is particularly on problems relating to movement and problems of invisibility In Part III the authors turn to the question of the independent justification of syntactic structure arguing that much hierarchical structure is not only unnecessary but also does not yield optimal analyses for a number of grammatical phenomena Part IV focuses on the use of syntax to account for phenomena that are arguably not syntactic it concludes that using syntax to model semantic phenomena is at best not necessary and at worse empirically inadequate Similarly using syntax to model morphological relations works only for a narrow subset of cases and cannot be sustained more generally without causing significant internal problems The book concludes with a review of minimalism laying out aspects of the logic of the Minimalist Program its assumptions and their motivations and consequences The authors argue that minimalism is best achieved by a leaner theory of linguistic representations along the lines of the constructional architecture of Simpler Syntax as proposed by Culicover and Jackendoff 2005

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Table of Contents Goals Of Linguistic Theory

1. Understanding the eBook Goals Of Linguistic Theory
 - The Rise of Digital Reading Goals Of Linguistic Theory
 - Advantages of eBooks Over Traditional Books
2. Identifying Goals Of Linguistic Theory
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Goals Of Linguistic Theory
 - User-Friendly Interface
4. Exploring eBook Recommendations from Goals Of Linguistic Theory
 - Personalized Recommendations
 - Goals Of Linguistic Theory User Reviews and Ratings
 - Goals Of Linguistic Theory and Bestseller Lists
5. Accessing Goals Of Linguistic Theory Free and Paid eBooks
 - Goals Of Linguistic Theory Public Domain eBooks
 - Goals Of Linguistic Theory eBook Subscription Services
 - Goals Of Linguistic Theory Budget-Friendly Options
6. Navigating Goals Of Linguistic Theory eBook Formats
 - ePub, PDF, MOBI, and More
 - Goals Of Linguistic Theory Compatibility with Devices
 - Goals Of Linguistic Theory Enhanced eBook Features
7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Goals Of Linguistic Theory
 - Highlighting and Note-Taking Goals Of Linguistic Theory
 - Interactive Elements Goals Of Linguistic Theory
8. Staying Engaged with Goals Of Linguistic Theory

- Joining Online Reading Communities
- Participating in Virtual Book Clubs
- Following Authors and Publishers Goals Of Linguistic Theory
- 9. Balancing eBooks and Physical Books Goals Of Linguistic Theory
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Goals Of Linguistic Theory
- 10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
- 11. Cultivating a Reading Routine Goals Of Linguistic Theory
 - Setting Reading Goals Goals Of Linguistic Theory
 - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Goals Of Linguistic Theory
 - Fact-Checking eBook Content of Goals Of Linguistic Theory
 - Distinguishing Credible Sources
- 13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development
 - Exploring Educational eBooks
- 14. Embracing eBook Trends
 - Integration of Multimedia Elements
 - Interactive and Gamified eBooks

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