

The Linguistics Enterprise

From knowledge of language
to knowledge in linguistics

Edited by

Martin Everaert

Tom Lentz

Hannah De Mulder

Øystein Nilsen

Arjen Zondervan

John Benjamins Publishing Company

The Linguistics Enterprise

From knowledge of language
to knowledge in linguistics

Edited by

Martin Everaert¹

Tom Lentz¹

Hannah De Mulder¹

Øystein Nilsen²

Arjen Zondervan¹

¹Utrecht University / ²Queen Mary, University of London



John Benjamins Publishing Company

Amsterdam / Philadelphia



TM The paper used in this publication meets the minimum requirements of American National Standard for Information Sciences – Permanence of Paper for Printed Library Materials, ANSI Z39.48-1984.

Library of Congress Cataloging-in-Publication Data

The linguistics enterprise : from knowledge of language to knowledge in linguistics / edited by Martin Everaert ... [et al.].

p. cm. (Linguistik Aktuell/Linguistics Today, ISSN 0166-0829 ; v. 150)

Includes bibliographical references and index.

1. Cognitive grammar. 2. Semantics. 3. Grammar, Comparative and general--Syntax.
I. Everaert, Martin.

P165.L54 2010

415--dc22

2009043585

ISBN 978 90 272 5533 4 (Hb ; alk. paper)

ISBN 978 90 272 8866 0 (Eb)

© 2010 – John Benjamins B.V.

No part of this book may be reproduced in any form, by print, photoprint, microfilm, or any other means, without written permission from the publisher.

John Benjamins Publishing Co. · P.O. Box 36224 · 1020 ME Amsterdam · The Netherlands
John Benjamins North America · P.O. Box 27519 · Philadelphia PA 19118-0519 · USA

List of contributors

Raffaella Bernardi

Faculty of Computer Science
Free University of Bozen-Bolzano
Via della Mostra 4,
39100 Bolzano, Italy.
bernardi@inf.unibz.it

Titia Benders

Institute of Phonetic Sciences
University of Amsterdam
Spuistraat 210, 1012 VT Amsterdam
The Netherlands
titia.benders@uva.nl

Paola Escudero

Institute of Phonetic Sciences
University of Amsterdam
Spuistraat 210, 1012 VT Amsterdam
The Netherlands
escudero@uva.nl

Rein Cozijn

Department of Communication and
Information Sciences
Tilburg University
PO Box 90153, 5000 LE Tilburg
The Netherlands
r.cozijn@uvt.nl

Martin Everaert

Utrecht institute of Linguistics OTS
Utrecht University
Janskerkhof 13, 3512 BL Utrecht
The Netherlands
m.b.h.everaert@uu.nl

Arnold E. Evers

Utrecht institute of Linguistics OTS
Utrecht University
Janskerkhof 13, 3512 BL Utrecht
The Netherlands

Andrea Gualmini

Utrecht institute of Linguistics OTS
Utrecht University
Janskerkhof 13, 3512 BL Utrecht
The Netherlands
a.gualmini@uu.nl

Jacqueline van Kampen

Utrecht institute of Linguistics OTS
Utrecht University
Janskerkhof 13, 3512 BL Utrecht
The Netherlands
j.vankampen@uu.nl

Arnout W. Koornneef

Utrecht institute of Linguistics OTS
Utrecht University
Janskerkhof 13, 3512 BL Utrecht
The Netherlands
a.w.koornneef@uu.nl

Hans van de Koot

Department of Phonetics and Linguistics
University College London
Chandler House
2 Wakefield Street, London WC1N 1PF
United Kingdom
h.v.d.koot@ucl.ac.uk

Tom Lentz

Utrecht institute of Linguistics OTS
Utrecht University
Janskerkhof 13, 3512 BL Utrecht
The Netherlands
t.o.lentz@uu.nl

Willem M. Mak

Department of Dutch
Utrecht University
Trans 10, 3512 JK Utrecht
The Netherlands
w.m.mak@uu.nl

Hannah De Mulder

Utrecht institute of Linguistics OTS
Utrecht University
Janskerkhof 13, 3512 BL Utrecht
The Netherlands
h.n.m.demulder@uu.nl

Ad Neeleman

Department of Phonetics and Linguistics
University College London
Chandler House
2 Wakefield Street, London WC1N 1 PF
United Kingdom
a.neeleman@ucl.ac.uk

Øystein Nilsen

Department of Linguistics
Queen Mary, University of London
Mile End Road, London E1 4NS
United Kingdom
o.nilsen@qmul.ac.uk

Sieb Nootboom

Utrecht institute of Linguistics OTS
Utrecht University
Janskerkhof 13, 3512 BL Utrecht
The Netherlands
s.g.nootboom@uu.nl

Rick Nouwen

Utrecht institute of Linguistics OTS/
Department of Dutch
Utrecht University
Janskerkhof 13, 3512 BL Utrecht
The Netherlands
r.nouwen@uu.nl

Eric Reuland

Utrecht institute of Linguistics OTS
Utrecht University
Janskerkhof 13, 3512 BL Utrecht
The Netherlands
e.j.reuland@uu.nl

Sivan Sabato

School of Computer Science and
Engineering,
The Hebrew University-Givat-Ram
Edmond Safra Campus
Jerusalem, 91904
Israel
sivan_sabato@cs.huji.ac.il

Ted J. M. Sanders

Department of Dutch
Utrecht University
Trans 10, 3512 JK Utrecht
The Netherlands
t.j.m.sanders@uu.nl

Joost Schilperoord

Department of Communication and
Information Sciences
Tilburg University
PO Box 90153, 5000 LE Tilburg
The Netherlands
j.schilperoord@uvt.nl

Jan Schroten

Utrecht institute of Linguistics OTS
Utrecht University
Janskerkhof 13, 3512 BL Utrecht
The Netherlands

Michael Sharwood Smith

Department of Language and Intercultural
Studies
Heriot-Watt University
EH14 4AS Edinburgh
United Kingdom
m.a.sharwood_smith@hw.ac.uk

Sharon Unsworth

Utrecht institute of Linguistics OTS/Meertens
institute
Utrecht University
Janskerkhof 13, 3512 BL Utrecht
The Netherlands
s.unsworth@uu.nl

Yoad Winter

Department of Modern Languages
Utrecht University
Trans 10, 3512 JK Utrecht
The Netherlands
y.winter@uu.nl

Wim Zonneveld

Department of Modern Languages
Utrecht University
Trans 10, 3512 JK Utrecht
The Netherlands
w.zonneveld@uu.nl

Arjen Zondervan

Utrecht institute of Linguistics OTS
Utrecht University
Janskerkhof 13, 3512 BL Utrecht
The Netherlands
a.j.zondervan@uu.nl

Table of contents

List of contributors	vii
The linguistics enterprise: From knowledge of language to knowledge in linguistics	1
<i>Martin Everaert, Tom Lentz, Hannah De Mulder, Øystein Nilsen & Arjen Zondervan</i>	
Scope ambiguities through the mirror	11
<i>Raffaella Bernardi</i>	
Phonetic and phonological approaches to early word recognition: Empirical findings, methodological issues, and theoretical implications	55
<i>Paola Escudero & Titia Benders</i>	
Restructuring head and argument in West-Germanic	79
<i>Arnold E. Evers</i>	
Scope assignment in child language: On the role of the Question Under Discussion	99
<i>Andrea Gualmini & Sharon Unsworth</i>	
The learnability of A-bar chains	115
<i>Jacqueline van Kampen</i>	
Looking at anaphora: The psychological reality of the Primitives of Binding model	141
<i>Arnout W. Koornneef</i>	
Incremental discourse processing: How coherence relations influence the resolution of pronouns	167
<i>Willem M. Mak & Ted J.M. Sanders</i>	
Theoretical validity and psychological reality of the grammatical code	183
<i>Ad Neeleman & Hans van de Koot</i>	
Monitoring for speech errors has different functions in inner and overt speech	213
<i>Sieb Nooteboom</i>	
What's in a quantifier?	235
<i>Rick Nouwen</i>	

Minimal versus not so minimal pronouns: Feature transmission, feature deletion, and the role of economy in the language system <i>Eric Reuland</i>	257
Against partitioned readings of reciprocals <i>Sivan Sabato & Yoad Winter</i>	283
The representation and processing of fixed and compositional expressions <i>Joost Schilperoord & Rein Cozijn</i>	291
Clitic doubling in Spanish: Agreement of the third kind <i>Jan Schroten</i>	315
Metalinguistic processing and acquisition within the MOGUL framework <i>Michael Sharwood Smith</i>	327
Catching heffalumps: Onset fricatives in child speech <i>Wim Zonneveld</i>	345
Index	377

The linguistics enterprise

From knowledge of language to knowledge in linguistics

Martin Everaert, Tom Lentz, Hannah De Mulder,
Øystein Nilsen & Arjen Zondervan

1. Introduction

The study of language and speech explores the interfaces between the rules and laws underlying human language, the systems of grammar, and the manner in which these interact with internal systems and processes (interpretation, speech perception and production) and with the outside world (acquisition, use, change and role in society). The study of language thus defined, centres on three dimensions, summarised in the following (partly subsequent) questions:

- i. What constitutes knowledge of language? The study of the architecture of the language system, i.e. language taken as a cognitive system, the computational/ logical modelling of this system, and the study of the interaction between its various components.
- ii. How is language acquired? The study of the cognitive processes underlying primary and secondary language acquisition.
- iii. How is language put to use, and used? The linguistic processes underlying language production, perception and interpretation under varying conditions, such as modality, social environment and speech context.

In this introduction, we will apply these questions to linguistics itself by abstracting from *knowledge of language* to *knowledge in linguistics*. In Section 2, we will address the question what knowledge in linguistics is by presenting an overview of the goals in current linguistic research. In Section 3, we will discuss how knowledge of language is acquired in linguistics, by discussing the range of techniques used by linguists. Finally, in Section 4, we will consider how the knowledge of the language system that is acquired by linguists is put to use to gain more in-depth knowledge of human cognition.

2. What is knowledge in linguistics?

2.1 The linguistics enterprise

Linguistics investigates the systems underlying language, speech and language use. Linguists seek to develop an understanding of the rules and laws that govern the structure and use of particular languages. They search for the general laws and principles governing all natural languages, i.e. the nature of the computational system of human language in its many guises and the way it fulfils our communicative needs. In other words, linguistics aims at a deeper understanding of the constraints and forces that shape human languages.

Linguists study all aspects of language: from the generation of speech sounds and their acoustical properties, to the role of language in social cohesion, and to how language gets processed by the brain and interpreted. To do so, we need a thorough understanding of the architecture of the language system and in-depth knowledge of its main components.

There are many approaches to the study of language. Some linguists study language as an independent system (architecture), describing and showing the interaction between the various parts of that system (phonetics and phonology, morphology and the lexicon, syntax, semantics and pragmatics). Other researchers are concerned with the processes of listening, reading, speaking and writing, and the acquisition of language (psycholinguistics, neurolinguistics, language acquisition). One might also study language as a cultural phenomenon, as a tool for social interaction, or one might take a historical perspective and study the familial relations among languages or how languages have changed over time.

In the last decades, one particular approach to the study of language has been prominent. According to this approach, language is an interesting phenomenon as it represents a structured and accessible product of the human mind, a window into the cognitive abilities of man: language studied as a means to understand the nature of the mind that produces it. Linguistics, thus, became part of cognitive science, the study of the higher-level mental functions, including memory, reasoning, visual perception/recognition, etc. It is this approach that is the starting point for theoretical frameworks such as Generative Grammar (in all its manifestations), Cognitive Linguistics, and many functional approaches.

Our ability to use language to communicate is a complex skill. It requires the ability to structure knowledge, to encode it in linguistic signals, and to interact with others using such signals. The acquisition of a language is, likewise, a highly complex process. Virtually all children learn their native languages quickly, with most of the crucial elements firmly in place by the age of six. Adults exhibit quite a different path when they acquire a second language, and do not necessarily come close to the

level of native speakers, even after a much longer time of learning and/or exposure. Crucial to present day linguistics is the question how children are able to acquire the intricate principles and properties of the language of their environment in such a short amount of time. Most researchers would agree that children acquire language through an interplay of innate mechanisms (for some a language module) and environmental factors. This poses the interesting question how nature and nurture interact in language learning. Additionally, the nature of innateness has to be studied. Can the ability to learn a language be explained by assuming innate cognitive structures that guide learning in a certain direction, or are specific elements of language itself hard-wired into the brain?

2.2 Subdisciplines in linguistics

The rapid growth of the field has led to a certain degree of fragmentation of linguistics into subdisciplines, between which cross-fertilisation has become increasingly rare. Over the years, the discipline has become more and more a conglomerate of largely independent research areas, such as sociolinguistics, syntax, language acquisition, discourse studies, phonology, computational linguistics, pragmatics, phonetics, etc. This is reflected in the existence of journals with names like “Journal of X” or “X” where X stands for the aforementioned list of subdisciplines. This is an inevitable development in every field, but at the same time it is unfortunate.

It is important to keep the discussion between the subdisciplines alive and keep in mind what the underlying, more fundamental questions about language are that we want to address as linguists. Focusing on different aspects of the questions that drive all linguists does not need to lead to mutual exclusion, but rather to complementary results. This volume tries to reflect that unified approach to the study of language. In this volume contributions from different subdisciplines are brought together: computational linguistics (Bernardi), discourse (Mak and Sanders; Nouwen; Schilperoord and Cozijn), language acquisition (first language acquisition: Escudero and Benders; Gualmini and Unsworth; Van Kampen; Zonneveld; second language acquisition: Sharwood Smith), phonetics (Escudero and Benders; Nootboom), phonology (Escudero and Benders; Zonneveld), psycholinguistics (Koornneef; Neeleman and van de Koot), semantics (Nouwen; Sabato and Winter), syntax (Evers; Neeleman and van de Koot; Reuland; Schroten). At an empirical level, the papers focus on: anaphoric interpretation (Koornneef; Mak and Sanders; Reuland), clitics (Schroten), verb clustering (Evers), connectives (Mak and Sanders), idioms (Schilperoord and Cozijn), quantifier (scope) (Bernardi; Nouwen; Gualmini and Unsworth), speech errors (Nootboom), *wh*-elements (Van Kampen), word recognition (Escudero and Benders) and onset fricative avoidance (Zonneveld).

3. How do we acquire knowledge in linguistics? Linguistic methodology

3.1 Experimental methods

The methods used in the study of language are diverse and can be roughly divided into three groups: behavioural, computational, and neurophysiological, such as electrophysiological measures (EEG), event-related potentials (ERP), magnetoencephalography (MEG) and magnetic resonance imaging (MRI)). It depends on the subdiscipline one is working in which methods are preferred. Do we, for instance, need psychological evidence to show which grammar's rules are 'psychologically real'? By that we mean, will only evidence acquired by perceptual tests, such as self-paced reading, cross-modal priming, visual-world paradigm, or tracking of eye movements count? No, any evidence will do, whether acquired by experimentation, or the use of corpora, or by assessing linguistic structures with our own judgements. As long as one can show that the data bear relevance to one's hypothesis, no methodology has any a priori preferential status. It depends on the questions one has which research methodology is appropriate. In this volume the type of research reported on is based on eye-tracking experiments (Koornneef; Schilperoord and Cozijn), reaction-time experiments (Escudero and Benders), elicited speech errors (Nooteboom), the use of corpora (Schilperoord and Cozijn; Mak and Sanders), longitudinal data (Van Kampen; Zonneveld), truth value judgment tests (Gualmini and Unsworth), intuitive judgements (Bernardi; Evers; Reuland;¹ Schroten; Sabato and Winter) and questionnaires (Nouwen).

The use of intuitive judgments has long been the hall-mark of theoretical research in syntax, semantics, and to a lesser degree in morphology and phonology.² We think that that doesn't hold true any more for much grammatical work now. If we take the work that is done in the institutions we are presently working at – Utrecht University and Queen Mary, London – we see syntacticians, semanticists, phonologists working together with psycholinguists, acquisitionists and sociolinguists, using experimental work to support their theoretical claims, making use of intuitive judgements, sometimes supporting them with magnitude estimation experiments, but similarly making use of corpora and questionnaires.

3.2 Theoretical and computational modelling

We use models to help us make sense of reality, or attend only to those features of it that are of interest to us in our enquiry. To model language is to provide an abstract

1. But do note that Reuland crucially bases his work on psycholinguistic and neurolinguistic work of others.

2. In a recent paper Wasow and Arnold (2005) claim that that situation still holds true for what they call 'generative grammarians'.

representation of its central characteristics, a grammar, so that it becomes easier to see how it is structured and used. Linguists cannot make much progress without using models, but they will have strongly diverging ideas about which models are appropriate for their aims.

A generative linguistic theory attempts to describe the tacit knowledge of a native speaker through a system of rules that, in an explicit and well-defined way, specifies all and only the well-formed sentences of a language. The study of the acquisition of language, for instance, must be solidly grounded in the study of the internal structure of the grammar. We need a thorough understanding of the architecture of the language subsystems and how the different components of grammar and the systems of use interact. The papers of Neeleman and van de Koot and Sharwood Smith sketch such a more comprehensive architecture.

Such understanding cannot be achieved without in-depth study of its main components: phonetics and phonology, morphology and the lexicon, syntax, semantics and pragmatics. The papers of Bernardi, Evers, Nouwen, Reuland, Schroten and Sabato and Winter take this route, discussing a certain phenomenon in detail, allowing us to build on that in language acquisition research, psycholinguistics and discourse studies. To some extent, computational modelling has also been used to simulate how language may be processed by the brain to produce behaviours that are observed. Computer models have been used to address several questions in parsing as well as how speech information is used for higher-level processes, such as word recognition.

4. How do we put knowledge in linguistics to use? Capturing cognition

Traditionally, linguistics was firmly rooted in the research traditions of the humanities. Studying language and speech was not only possible through curricula offered by departments of (comparative) linguistics/phonetics, but also in programmes offered by departments of modern language and culture, such as the department of English, the department of Spanish, the department of Dutch etc. In the last decades of the 20th century, the study of language moved away from its philological roots, positioning itself more and more as a cognitive science. Nowadays, the study of language and speech is predominantly seen as part of the Cognitive Sciences, constituting a natural federation of scientific disciplines, including psychology, neuroscience, artificial intelligence, and information science, with a shared research agenda.

Underlying the cognitive sciences is the conception of human beings – individually as well as collectively – as information processing systems. This deep analogy makes it possible for researchers to study natural and artificial intelligence, including the interactions between the two, from a coherent theoretical perspective. This conception has fundamentally changed the outlook of linguistics by establishing close connections both with the formal sciences, leading to computational linguistics, and

with psychology, resulting in the joint venture of psycholinguistics. The recent efforts to link linguistics to biology and cognitive neuroscience hold considerable promise for a further dimension in the understanding of the cognitive faculties involved in language. This does not entail a reduction of linguistics to other disciplines. It depends on one's position on the question whether mental entities like consciousness are reducible to the algorithm or system that produces them. Language philosophers like Searle posited this problem (the Chinese Room argument (Searle 1980)). This does not mean, however, that there is no viable enterprise in connecting linguistic theory with psychology, mathematics and computer science, biology, or neuroscience. Many studies, including a number of contributions to this volume, are examples of that fact.

We will address the question of how knowledge of the language system is obtained in linguistics relates to human cognition by discussing three important topics in the current debate on this issue: psychological reality, modularity and the competence/performance distinction.

4.1 Psychological reality

The introduction of generative grammar (re)oriented linguistics towards the 'psychological reality' of grammars, as an object of study instead of a mere part of the black box that produces (linguistic) behaviour. Psychological reality is usually meant to indicate an underlying claim about what such a model is attempting to explain. Psychological reality is a claim about the validity of a theory, where validity is conformity to or correspondence with external reality. Thus, the theory of Universal Grammar is psychologically real and the principles it incorporates are valid to the extent that they conform to external reality. Following Smith (2004), we assume that, to a large extent, such a conception is uncontroversial. Many would agree that our linguistic behaviour can be described in terms of rules and principles. Paraphrasing Smith (op. cit p.97), it seems unexceptionable to state that we have something like a 'rule' that states that determiners precede nouns and verbs precede particles in English – *the man/*man the; buy a car/ *a car buy* – but it is often conceived as quite a different matter whether there is a rule that moves a *wh*-element to sentential-first position, leaving behind a trace (*Who_i did you see e_i*). Postulating knowledge 'in our head' of categories of the type determiner, noun, verb, particle and the concept of left-right ordering seems uncontroversial, but claiming the psychological reality of the concept of movement of categories, leaving behind traces, is often considered controversial. It is simply an empirical hypothesis that can be proven wrong, or right, for that matter (cf. Friedmann et al. 2008).

The topic of psychological reality is addressed in a number of papers in this volume. Koornneef looked into the psychological reality of the Primitives of Binding model of Reuland (2001) by doing eye-tracking experiments to show that the economy hierarchy at the basis of Reuland's model is reflected in real time anaphora

comprehension. Gualmini and Unsworth do the same for two other theoretical constructs, surface scope and Question Under Discussion. Nouwen tries to reconcile what linguists know about quantifying expressions with what cognitive psychologists have observed. He tries to bring together the psychological models of quantifier meaning and the models provided by formal semantic theory. Van Kampen observes that for the study of language acquisition it is evident that grammatical distinctions should reflect psychological reality, but she also observes that it is not immediately clear whether our research has advanced enough to make such claims tangible. Sharwood Smith argues that his model of (second) language acquisition not only explains linguistic knowledge in the individual and the logical problem of language acquisition, but also accounts for how language is processed on-line.

4.2 Modularity

A long standing question in cognitive science is how we should think about the structure of the mind. To what extent does the mind/brain consist of separate faculties that are each specific to particular types of processes? We can consider different kinds of answers to this question: all of the mind could be recruited in all of the things we do or specific areas of the mind could be dedicated to particular cognitive domains. The idea that particular cognitive tasks are dealt with by specific areas in the mind is termed the modularity theory of mind, discussed at length in Fodor (1983). However, Fodor was not the first to consider the mind/brain as constituting of different parts: in the 18th century, phrenologists already proposed that the different brain areas were engaged in different cognitive functions.

But what does it mean for a particular part of the brain to be engaged in a specific cognitive function? According to Fodor, a particular cognitive function corresponds to a module in the brain if a number of characteristics have been met. Among other things, the module for a particular cognitive function has to be domain specific, mandatory, fast and informationally encapsulated. An example will make these characteristics more concrete: take the cognitive function vision. In order to determine whether vision is a module in the Fodorian sense, the vision module should respond only to visual stimuli, not to any other types of stimuli. If so, it can be considered domain specific. In order to be considered mandatory and fast, the vision module has to “see” something rapidly whenever it gets the appropriate visual input, whether or not it makes sense in the given context. The vision module should immediately register a tiger when it gets the appropriate visual input for tigers, even though the tiger is seen in a highly unlikely context (a shopping mall in the Netherlands, for instance). This last point also relates to the notion of informational encapsulation: a module cannot refer to the output or workings of other areas of the brain not part of the module. The module can thus only work with its specified input, which, in the case of the example, is visual stimuli.

Aside from vision, many other cognitive functions are also considered to be modules in this sense. The relevant question for our present purposes is: is language one of them? In other words: does the language module only respond to language? Is it mandatory that we parse language when we hear it and do we do so quickly? And do we recruit knowledge from outside the direct linguistic input when we use language? Especially this last question has been the topic of much debate in linguistic inquiry over the last few decades. Is language informationally encapsulated? If it is, we must assume that world knowledge, hearer's expectations, speaker's intentions etc. do not play a role in the processing and production of language. An alternative would be to assume that only particular aspects of language (grammatical processing is a prime candidate) are informationally encapsulated.

Issues of the kind described above are addressed in many of the contributions to this volume. In his study, Koornneef, for example, assumes that syntax and discourse are separate modules of language. In his view, syntactic operations in the domain of anaphora resolution are fast and mandatory and they are not influenced by available discourse information. An opposite view is presented in the contribution by Mak and Sanders. They claim that contextual and discourse information given by the use of particular causal connectives does influence syntactic processing. Aside from these two contributions that address this issue quite explicitly, the role of extra-linguistic knowledge in language processing is also a running theme in a number of the other contributions. Sabato and Winter, for example, consider the role of contextual factors on the partitioned reading of reciprocals. In the domain of second language acquisition, Sharwood Smith's contribution concerns the influence of metalinguistic knowledge on the acquisition of language. His central question is whether language learners are able to recruit metalinguistic knowledge to aid them in the language acquisition process. Regarding first language acquisition, Gualmini and Unsworth consider the role of the discourse in children's ability to resolve ambiguity in scope assignment.

Contributions from different fields of linguistics (first and second language acquisition, syntactic processing, discourse analysis) are thus all concerned with the modular status of language in general and its informational encapsulation status in particular.

4.3 The competence/performance distinction

In any field of study the question arises whether we should investigate the object of study by taking external factors and imperfect behaviour into account, or whether we should aim at uncovering idealised underlying laws, abstracting away from irrelevant interfering factors in the behaviour of the object of study. As Niaz (1999) points out, an important breaking point in this discussion in the natural sciences was when Galileo presented his law of free fall, which idealised away from interfering factors such as air resistance, something many of his precursors in the Middle Ages

had considered unacceptable. A key issue in the debate was that the idealised law can never be observed in reality, but has to be extrapolated from observations that approach the ideal situation.

This ‘Galilean idealisation’ made its way into the psychological sciences when Piaget made a distinction between *epistemic subject* and *psychological subject*, the first one being the idealised version of the latter (see Niaz 1999). The epistemic subject is the ‘ideal knower’, the underlying competence of subjects, ignoring irrelevant limitations that affect performance in experiments. The rationale is that just like in the natural sciences, the underlying competence can be approximated by varying the irrelevant interfering factors and extrapolating from those findings.

This distinction between underlying *competence* and observable *performance* was applied to linguistics most famously by Chomsky (1965). He posited that the subject matter of linguistics should be the mental system of rules that makes up the speaker’s knowledge of language, not the behaviour that results from application of these rules in production and comprehension. However, just like in Galileo’s case, the competence is only observable by observing performance, so the same method of extrapolation to the ideal has to be applied.³

Conceptually, there are two alternatives in linguistics to this method of approximation of the underlying ideal. The first one is to break with the idea that the subject matter of linguistics should be only the idealised mental system. Many linguists are interested in the way the language system works when factors that Chomsky (1965) would consider interfering, are taken to be part of the language system itself. For instance, much research is done on the interplay of memory and mechanisms of language production and comprehension (e.g. parsing), while one could decide to consider memory limitations to be a performance factor that lies outside the language system. The most radical version of this view of linguistics would be to investigate only performance itself, without any idealisation to speakers’ competence. However, the question then arises whether any meaningful generalisations can be made without reference to an idealised competence, or whether, as Chomsky puts it: ‘investigation of performance will proceed only so far as understanding of underlying competence permits’ (1965: 10).

The second alternative in linguistics to idealisation from performance to competence is to focus on competence only. This can be done by taking the data that is accounted for by an existing theory of competence and designing a new theory of competence that accounts for the same data (it has the same *descriptive adequacy*),

3. Chomsky points out that even when intuitive judgments by native speakers are used, performance factors may interfere and that it is the task of the linguist to extract these intuitions in such a way that extrapolation to the idealised competence is possible.