



Methodology in generative linguistics: scratching below the surface

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ARTICLE INFO

Article history:

Received 2 September 2013

Received in revised form 15 February 2014

Accepted 21 February 2014

Keywords:

Linguistics

Methodology

Data analysis

Theory confirmation

ABSTRACT

This paper examines some methodological issues of contemporary linguistics from three general standpoints. A macro-level view sketches general, broad outlines of a technique. While this is the most common form of methodological discussion – by philosophers and linguists, including those of the “biolinguistic” persuasion – it is of limited use. In contrast, a micro-level perspective emphasizes those details that actually make a procedure do what it does. At this most important level of granularity, there has been very little development in generative linguistics. E.g., there are currently virtually no explicit means by which one might address a methodologically fundamental question about a data set such as “How much data is there?” A meso-level perspective allows for some aspects of a method to be compared with others. Inter alia, this perspective helps to identify narrower, more tractable methodological issues that currently need attention.

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1. Introduction

Psychology, beset with all of its conceptual difficulties, complexities, and logical challenges, has always harbored some of the most aggressive and ingenious adaptors of scientific developments from other fields. ... Why this is so is patently obvious – the needs of the science are so great that the tendency to adopt anything that may help to design and execute experiments or that may provide a conceptual or metaphorical bridge to a satisfactory theory is overwhelming.

(Uttal, 2003, 45)

Since its inception over a half-century ago, generative linguistics has aimed to characterize the distinctively linguistic components of the human mind. During much of this period, linguists have developed increasingly sophisticated theories with two main goals in mind: to explain both the remarkable variety of linguistic phenomena, and also how such phenomena can be appropriately realized by normal humans in normal conditions. Much of this theorizing has coalesced around theories of the *faculty of human language* (FHL), a hypothesized cognitive structure that links these two goals. Over the years, theories of FHL have become increasingly sophisticated. The relatively recent rise of the biolinguistic program has continued this tradition by suggesting additional constraints on theories of FHL that aid its biological plausibility.

In what follows, I consider some key aspects of the *methods* by which such theories are derived, confirmed, criticized, etc. In many respects, nothing could be more ordinary. Nearly every other area of empirical research has many journals, books, societies, faculty lines, etc. devoted to such matters. E.g., consider such journals as *Biometrics*, *Psychometrika*, *The Journal of*

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Mathematical Psychology, Psychological Methods, Econometrica, Journal of Chemometrics, Journal of Chemical Information and Modeling, Chemometrics and Intelligent Laboratory Systems. Cf. Section 6 for discussion and details. However, while research into the structure of FHL has flourished, the manner by which such research is conducted has received virtually no attention, at least in the central component of linguistics this paper addresses; cf. (1). That is, while the list of journals above could be extended, it still wouldn't contain a "*Linguometrika*". But the methodological needs of linguistics are at least as great as those of the other fields of empirical research.

This paper has two main theses. First, I argue that generative linguistics should follow the age-old scientific trend of vigorously analyzing and improving explicit methods appropriate to the discipline. Such a project can be entirely complementary with the primary study of FHL, and the two (to the extent they differ) would naturally be pursued simultaneously and symbiotically. Second, I also maintain that one of the reasons this hasn't happened is that there has already been a long tradition of methodological discussion in linguistics. However, this discussion has taken place at a relatively superficial level. Such discussions, I argue, can serve some important purposes, but they are no replacement for the level of detail required for the needed methodological advancements.

A particular method or procedure can often be viewed in many ways; this paper considers three such rough-and-ready categories: a very general "macro-level" perspective; a quite detailed "micro-level" one; and a middling "meso-level" view. These categories are purely heuristic, and do not indicate any sharp boundaries; my use of *methodology* and like terms is similarly loose and general.¹ Despite their informality, these notions still point to some important distinctions. The most basic message about these views is that they are not on an equal par. Macro- and meso-level views of methods have historically received much more attention in the relevant literature, partly because they supply more readily accessible presentations. But the missing details are crucial. Indeed, they determine whether, why, and in what respects the macro- and meso-level claims are true.

Across the sciences, the emphasis on quantitative micro-level details is absolutely standard. Indeed, the field-specific study of a field's methods are often the topic of whole subfields (cf. below; Uttal, 2003; Danks and Eberhardt, 2009 for some discussion). In like fashion, I think that the need for attention to micro-level methodological details in linguistics is particularly important. Below I discuss the need for three kinds of micro-level developments. (i) Most generally and importantly, linguistics is in desperate need of an explicit quantitative theory of the uncertainties inherent in theorizing about FHL. Such a theory itself should have various features, such as (ii) the ability to aid in the assessment of a data sets' evidential bearing on a given theory. In particular, it should help to replace the false but familiar view that the "best" available theory should be "tentatively accepted as true" with a much more fine-grained analysis. But these bigger methodological goals can themselves be met only by attention to myriad more humble matters. For example, (iii) no serious advancement in linguistic methods can be made without a better sense of such basic characteristics of a body of data as its size. How much data is there in a given study – a little? a lot? More than 15 observations? As fundamental as this issue is, how one might even *begin* to go about addressing it is itself virtually never addressed in the core methodological approaches to generative grammar. It is nowhere addressed in, say, (1):

- (1) (Baker, 1988; Boeckx, 2006; Chomsky, 1981, 1995; Grimshaw, 1990; Hale and Keyser, 1986, 1987; Hornstein, 2009; Kayne, 1994; Williams, 1980, 1983; Baker, 2001; Boeckx and Piattelli-Palmarini, 2005; Chomsky, 2000, 2002; Walenski and Ullman, 2005; Chomsky, 2005, 2007; DiSciullo and Boeckx, 2011; Epstein, 2007; Jackendoff, 2002, 2011)

(1) is just a sample; it could be increased by orders of magnitude by merely examining a few issues of, say, *Linguistic Inquiry*, *Natural Language and Linguistic Theory*, *Biolinguistics*, etc. Moreover, this fundamental matter is more challenging in linguistics than simply counting up participants in a study; rather it appears similar to some of the issues of data reduction in multivariate data analysis. But this additional complexity only strengthens the need for explicit methods, to say nothing of the great many more (and more difficult) matters lying at the core of empirical research, linguistic and otherwise.

Before beginning, a few caveats are in order. This paper focuses on those methods most commonly employed in Chomskyan generative grammar, and the term *linguistics* here covers only this core component of the discipline. E.g., I have in mind general technical works, theoretical discussions, many biolinguistic discussions, etc. such as those in (1). However, I do not directly address such areas as corpus linguistics, computational linguistics, neurolinguistics, psycholinguistics, and many other types of research [Schütze (1996) supplies a much broader overview of various linguistic methods].

Additionally, this paper concerns how given evidence is taken to bear on the construction and confirmation of linguistic theories, especially components and computational processes of FHL. In particular, judgments of grammaticality (inter alia) are assumed to be correct, and no questions of their reliability, validity, etc. arise here. Thus, this paper contrasts with much current methodological research concerning how linguistic data *should* be generated. E.g., some authors defend the standard methods of evidence collection, where a single person, often the linguist herself, confronts one or two instances of a construction, and makes a judgment about the status of the construction, e.g., (Gross and Culbertson, 2011; Phillips, 2009; Culicover and Jackendoff, 2010); also (Sprouse and Almeida, 2010, 2012) use statistical methods to validate these

¹ Terms like *method* etc., only gesture at how a typical practitioner goes about doing what she does, perhaps with reference to her various goals and the materials available to her. Similarly, I will often write as if a research area had a single, consistent, stable, universally applicable methodology. This is importantly false, as discussed in detail below. But since the task at hand turns on the details of concrete methodological examples – as opposed to the entire methodological toolkit that various researchers in a given field (however this latter notion is spelled out) employ – this literary convenience will do no harm.

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