



Introduction: Cognitive Phonology

As it has generally been conceived of since its inception, cognitive linguistics (CL) is an approach to the study of language that endeavours to explain facts about language in terms of known properties and mechanisms of the human mind/brain. The guiding principle behind this area of linguistics is that the human language ability is not separate from the rest of cognition, that the storage and retrieval of linguistic data is not significantly different from the storage and retrieval of other knowledge, and that use of language in understanding employs similar cognitive abilities to those used in other non-linguistic tasks. CL also argues that language is embodied and situated in the sense that it is embedded in the experiences and environments of its users.

Since CL was ‘officially’ born in the mid-eighties with the seminal works by Lakoff (1987) and Langacker (1987), most studies within this school of linguistics have focused on semantics and grammar. It is true that even the work by Lakoff and Langacker already contains references to phonology (in fact, Langacker’s *Cognitive Grammar* gives a prominent role to the phonological pole of linguistic units). However, phonological work in CL, with notable exceptions such as the work of a few scholars like Geoffrey S. Nathan (e.g. Nathan, 1986, 1994, 1996, 1999) or John Taylor (e.g. Taylor, 1989, 1990, 2002), has always been sparse in comparison with the attention paid to other areas of study like semantics or grammar. This is even more surprising since the study of phonology represented, historically, the onset of modern linguistics and was also a flagship of other approaches to language like structuralist (e.g. Trubetzkoy, 1939) or generative linguistics (e.g. Chomsky & Halle, 1968).

Despite the traditional under-representation of phonological issues within CL, recent years have witnessed a growing interest in phonology shown by the increasing number of phonological

papers in books or journals like *Cognitive Linguistics* and the phonology theme sessions organized at the *International Cognitive Linguistics Association* conferences from 1999 on. One important aspect of this increasing body of work is that it is heterogeneous as to the formalisms and methods that it uses, which does not make it a rigid field (from the formalist point of view) like other recent approaches to phonology (e.g. Optimality Theory) or one defined by reference to the methods that it uses (e.g. Laboratory or Experimental Phonology). However, despite the heterogeneity of current cognitive phonological work, researchers working in this area endorse the view that the phonological component of languages can be explained with reference to known properties and mechanisms of the human mind/brain as well as by embodied experience and environmental factors. ‘Cognitive phonologists’ also endorse the *Cognitive Commitment* and the *Generalization Commitment* (see e.g. Gibbs, 1996; Lakoff, 1990). Applied to phonology, the *Cognitive Commitment* implies that phonological concepts, categories and constructs need to have psychological validity, which is best secured by informing phonological work with a broad empirical basis -including experimental research- from a wide range of disciplines like phonetics, psycholinguistics, sociolinguistics, second language acquisition, cognitive psychology, developmental psychology, etc. The *Generalization Commitment* implies that, although it may be useful to treat different areas of language study (e.g. phonology, semantics, syntax, morphology, etc.) as notionally distinct, CL is committed to investigating “how the various aspects of linguistic knowledge emerge from a common set of human cognitive abilities upon which they draw, rather than assuming that they are produced in encapsulated modules of the mind” (Evans *et al.*, in press: 5). In addition, ‘cognitive’ phonologists also endorse the view that phonological categories/constructs are shaped not only by cognitive factors but also by factors of a phonetic (articulatory, acoustic, perceptual), linguistic (historical, distributional, structural, frequential, etc.), sociolinguistic (gender, social class, etc.), cultural (e.g. orthographic), or developmental kind (factors of other kinds can also be added to this list).

It is within this context that this special volume of IJES makes its appearance. By bringing together a number of papers on the segmental and suprasegmental aspects of language (English as the reference language) and especially written for this occasion, the volume aims to contribute to the relative scarcity of work on phonology within CL.

David Eddington opens the volume with his paper “Paradigm Uniformity and Analogy: The *Capitalistic* versus *Militaristic* Debate”, in which he presents the results of a study in which

the author used a computationally explicit algorithm and a data set of 3,719 instances of the allophones of /t/ taken from a language corpus. The results obtained lead to the author's contention that all allophonic distribution may be explained in terms of analogy to stored linguistic experience. This is in contrast to previous ideas of analogy as a process that interferes with the application of general rules.

The contribution by **John Taylor** entitled "Where do Phonemes Come from? A View from the Bottom" explores the possible sources of phonemes as conceptual categories. In this paper, the author contrasts two learning paradigms -supervised learning (where learners receive feedback on their categorization attempts) and unsupervised learning (where learners rely only on properties of the input). Taylor argues that unsupervised learning may be the appropriate paradigm, at least for the initial stages of acquisition of phonological categories. Thereafter, the emergence of phoneme categories draws on various kinds of knowledge available to the learner, including knowledge of articulation, and of literacy conventions. The paper concludes with a section that emphasizes the taxonomic nature of the phoneme, and suggests that the special salience of a phonemic representation reflects the status of the phoneme as a basic-level category.

The paper by **Helen Fraser**, "Phonological Concepts and Concept Formation: Metatheory, Theory and Application" presents an overview of Phenomenological Phonology, (including its metatheory, theory and application) for comparison with Cognitive Phonology. The author claims that, while Phenomenological Phonology and Cognitive Phonology are in close agreement at the theory level, there are some significant differences at the level of metatheory. As a case in point, Phenomenological Phonology considers phonological terms (such as *phoneme* and *word*) to be words like any others, and gives detailed consideration to the concepts behind such terms. It also considers pronunciation to be a form of behaviour, driven by concepts created through general concept-formation processes. This has important consequences for practical application in the areas of pronunciation and literacy teaching.

Within Ronald Langacker's theory of Cognitive Grammar, **Fumiko Kumashiro** and **Toshiyuki Kumashiro**, in their article "Interlexical Relations in English Stress", propose a cognitive, non-reductionist analysis of English stress as it pertains to interlexical relations, based on the usage-based model as proposed by Cognitive Grammar and on the connectionist interactive activation model. The authors claim that interlexical relations involved in English

stress can be satisfactorily accounted for by employing actually-occurring expressions as constraints and that precise explication of these relations requires consideration not only of phonological but also of semantic factors.

Gitte Kristiansen's paper "Towards a Usage-Based Cognitive Phonology" argues that cognitive phonology must aim at a higher degree of descriptive refinement, especially in the direction of social variation. The paper argues that phonemic analysis should be carried out taking into account the rich patterns of language-internal variation. It also examines the implications of a usage-based and multi-faceted model for a theoretical discussion of the phoneme as a prototype category.

In the paper entitled "The Phoneme as a Basic-Level Category: Experimental Evidence from English", **José A. Mompeán** presents the results of a concept formation experiment that provides evidence on the possible existence of a basic-level of taxonomic organization in phonological categories as conceived of by phonetically naïve, native speakers of English. This level is roughly equivalent to the phoneme as described by phonologists and linguists. The paper also discusses the reasons why the phoneme could be considered as the basic level of taxonomies of phonological categories.

The paper "Is the Phoneme Usage-Based: Some Issues" by **Geoffrey S. Nathan** presents a brief review of the history of the phoneme, from its origins in the nineteenth century to Optimality Theory, including some Cognitive Linguists' views of the concept. In the paper, Nathan argues that current 'usage-based' theorists' views of the phoneme may not be able to explain some facts about how naïve speakers process language, both consciously and subconsciously. These facts include the invention of and worldwide preference for alphabetic writing systems, and language processing evidence provided by Spoonerisms, historical sound changes affecting all (or most) lexical items in a language and each other, and the fact that allophonic processes normally do not show lexical conditioning. The author further suggests that storing speech in terms of a small number of production/perception units such as phonemes could be due to the fact that phonemes seem to optimize both efficiency and informativeness in much the same way as other basic-level categories.

A review of a recently published book brings this monograph issue of IJES to a close. **John R. Taylor** reviews Riita Välimaa-Blum's recent book *Cognitive Phonology in Construction Grammar: Analytic Tools for Students of English*.

I would like to end this introduction by expressing my gratitude to all the contributors to the volume for their professionalism and patience in the process of editing this monograph, as well as to the referees who evaluated the texts and supplied valuable feedback and advice to the authors. I expect that readers will find this collection an interesting sample of how cognitive approaches to language can be applied to phonological work and that this collection will contribute both to the interest in the study of phonology among cognitive linguists and the interest among phonologists in cognitive approaches to phonological work.

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