

Clark's approach builds on the view that linguistic meaning arises from social coordination rather than from mental representations, and, as motivation for his view, he does an excellent job of describing the social aspect of linguistic interaction, helping the reader to better understand how language works and the unequivocal link between a speaker/player and his/her place within the world. The book does not presuppose any knowledge of game theory or semantics. Since the goal of the book is to make game theory accessible to a wide variety of readers, the level of mathematical formalism is kept simple enough for a general audience to understand. For the more mathematically-inclined reader, the author includes many formal definitions in boxes throughout the text, and there is also a comprehensive list of suggested readings at the end of each chapter. In short, this is a well-written introduction to game theory and its application to natural language meaning that will be of interest to semanticists and pragmaticists, as well as communication scholars, particularly those interested in the relation between social interaction and meaning construction.

BIBLIOGRAPHY

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- Clark, Robin, and Prashant Parikh. 2007. Game theory and discourse anaphora. *Journal of Language, Logic and Information* 16: 265–282.

Bryan Gick, Ian Wilson, and Donald Derrick. 2013. *Articulatory Phonetics*. West Sussex: Wiley-Blackwell. Pp. xxii + 250. CDN\$56.95 (softcover).

Reviewed by Sarah D.F. Greer, *University of Calgary*

Articulatory Phonetics is a first-edition textbook by Gick, Wilson, and Derrick. The book is divided into two parts: Part I tackles basic anatomy and how thought becomes sound, while Part II delves into how specific types of sounds are articulated. Each chapter begins with an abstract and ends with exercises such as short-answer questions and/or practical assignments. Also included at the end of each chapter is a section titled *sufficient jargon*, which is a list of key terms the student should become familiar with.

Part I begins with “The Speech System and Basic Anatomy” whose main focus is on the building blocks of anatomy, although it does briefly discuss the speech chain. It includes an explanation of anatomical planes (full body & vocal tract), an introduction to the hard and soft materials in the body (bones and cartilages vs. muscles) that are discussed in detail in the other chapters, as well as a brief discussion of the different types of devices available to track and measure articulatory movements. These are then cross-referenced with the chapters in which each device will be discussed.

The second chapter “Where It All Starts: The Central Nervous System” gives an overview of said system, its composition, and how it sends messages to other parts of

the body. It also treats the areas of the brain; those used specifically for speech, such as Broca's and Wernicke's areas, other areas that facilitate speech perception, such as the visual cortex, and subcortical speech areas that affect fine motor function. Methods for measuring brain activity are mentioned (such as fMRI, PET, EEG, MEG, TMS), as well as how each of these methods work, what they measure, and the pros and cons of each with respect to conducting experiments with human participants.

The peripheral nervous system is discussed in Chapter 3, "From Thought to Movement: The Peripheral Nervous System", with a focus on the cranial nerves that are important for speech production, the spinal nerves and their role in speech, and the composition of muscles and how they move. The authors discuss the pros and cons of using surface vs. intramuscular electromyography (EMG) techniques to measure muscle activation, as well as how response latencies to outside stimuli (auditory, visual, tactile) compare to the thought signal time that causes muscle movement.

Chapter 4 "From Movement to Flow: Respiration" begins with a discussion of airflow principles (Boyle's Law, equalization of pressure), lung volume (respiration volumes: tidal breathing, speech breathing, maximum breathing), and how lung volume is measured. It also addresses the anatomy involved in respiration (the bones, cartilage, and muscles, both inspiratory and expiratory), the respiratory cycle and muscle activation, measuring airflow and air pressure with pneumotachograph, and the connection between airflow and pitch and loudness.

Chapter 5 "From Flow to Sound" explores the intrinsic anatomy of the larynx, including the small cartilages and muscles of the larynx, where they attach to the larger laryngeal structure, and where the vocal folds attach to said structure. This chapter also discusses modal phonation and voicelessness, as well as theories of phonation. The latter include myoelastic aerodynamic theory and Bernoulli's principle, multiple-mass models of vocal fold vibration, as well as brief mentions of cover body and flow separation theories and the muco-viscose effect. Pitch control is also discussed, which includes a description of fundamental frequency (F0) and how F0 changes with respect to the positioning of intrinsic laryngeal muscles, larynx height, and subglottal pressure. This chapter ends with a discussion of how vocal-fold vibration can be measured through the use of electroglottography (EGG).

Part II begins with "Articulating Laryngeal Sounds". This chapter examines the extrinsic anatomy of the larynx, including the hyoid bone and the various muscles that contribute to larynx movement, and where these muscles are attached in the greater structure. Non-modal phonation types, including breathy, creaky, and falsetto voices, a discussion of subharmonic phonation, glottalic airstream mechanisms, and how to measure laryngeal articulations via endoscopy are also surveyed.

Chapter 7 "Articulating Velic Sounds" moves the anatomical discussion on to the oral cavity and explores the bones in the skull, the muscles of the velum, and the sphincters that facilitate swallowing. The distinction between oral and nasal sounds, including methods for achieving the distinction, and uvular constrictions are also covered in this chapter, along with the use of X-ray video to measure the position of the velum.

The anatomy that holds the tongue in place and allows its movement is explored in Chapter 8 “Articulating Vowels”. Included here is a discussion of the mandible, the jaw joints and muscles, and the extrinsic tongue muscles, as well as where these attach to the larger structure. Vowel articulation is discussed, highlighting the differences between high front, high back, and low vowels, as well as advanced and retracted tongue root. The chapter ends with a section on measuring vowels via ultrasound.

The intrinsic anatomy of the tongue is covered in Chapter 9 “Articulating Lingual Consonants”, along with lingual consonants, and a discussion of the degree, bracing, and location of constrictions for approximants, fricatives, trills, taps, and stops. Measuring techniques for lingual consonants using palatography and linguography finish off the chapter.

Chapter 10, “Articulating Labial Sounds”, includes a brief discussion of the perception of speech through auditory, visual, and tactile stimuli. It also treats the muscles of the lips and face, and the articulation of bilabials, labiodentals, and rounding. This chapter concludes with a section on how to use point tracking and video to measure the aperture and rounding of the lips and face.

The final chapter “Putting Articulations Together”, looks at the different models for coordinating speech movements, including context-sensitive and context-invariant models of vocal tract motion during speech. It also discusses coordinating complex speech sounds (such as linguals: liquids, rhotics, and clicks), the lingual-labial [w], and coarticulation. This chapter ends as its precursors do, with a measuring technique; using tomography to measure the entire vocal tract.

The appendix includes a list of abbreviations as well as a list of muscles with their innervation, origin, and insertion.

Gick, Wilson, and Derrick have created a comprehensive, engaging textbook that serves as a much-needed complement to the existing acoustic and auditory phonetics references (e.g., Reetz and Jongman 2009, Ladefoged and Maddison 2011). The text is full of clearly labeled diagrams, helpful flowcharts, the etymology of pertinent vocabulary, memorization techniques, and reminders about potentially tricky terms. In addition, budding phoneticians and non-phoneticians alike will appreciate the interesting asides found throughout the book that introduce information that may not be directly related to the material, but helps to relate the material to the everyday world around us. These asides ensure that the content is accessible and interesting for students. Some of this reviewer’s personal favourites include the suggestion that budding phoneticians take statistics, a section on multimodality and feedback, a discussion of why lungs collapse, and the relation between linguolabials and Britney Spears. Visually, the diagrams and flowcharts are well laid out and easy to interpret, and are also cross-referenced with the chapters in which additional information can be found, further facilitating the learning process.

As mentioned in the Introduction, each chapter concludes with a list of terms that the student should be familiar with, and exercises that will help flesh out the student’s understanding of the subject material. These exercises include instructions and schematics on how to make a paper larynx and a clay tongue, which are an excellent way to familiarize students with the pertinent anatomy. Furthermore, the helpful images of

the larynx used in Chapter 5 show it from multiple vantage points, including a cross-sectional image of the internal structure of the vocal folds, which is not usually seen in phonetics materials. Similar images displaying various structures in the speech production system can be found in many of the chapters.

In addition to its educational merits, another achievement of this textbook is the way it encourages readers to think about the research process. Beginning in the early chapters of the book, and continuing throughout, benefits and drawbacks are listed for each of the measurement and imaging techniques mentioned. This gives the student the opportunity to understand the research process from both sides: as a researcher and as a participant.

The exceptional organization of this book, its focus on facilitating the learning process, and on introducing the student to the world of phonetics research makes it the missing piece to phonetics classroom references. *Articulatory Phonetics* excels at accomplishing the core purpose of a textbook: drawing students into the subject.

Manuel Díaz-Campos. 2014. *Introducción a la Sociolingüística Hispánica*. Malden, MA/Oxford: Wiley-Blackwell. Pp. xii + 596. CDN \$70.95 (softcover).

Reviewed by Giovani López, *University of Alabama*

Introducción a la Sociolingüística Hispánica is a textbook on sociolinguistics that discusses linguistic variation in the Spanish language and how this variation is perceived by society. This innovative textbook, written in an easy-to-read Spanish, incorporates cultural components like popular music in order to explain linguistic processes, and covers the most important topics that the Spanish student, linguist, or researcher requires in order to understand Spanish as it is spoken in society, and as a cultural manifestation of ideological and sociological perceptions. Díaz-Campos highlights the different sociological aspects that shape language as well as their significance in society and in education, and reinforces the learning of these concepts through practice exercises at the end of each chapter. In short, this work on sociolinguistics facilitates the understanding of Spanish from a linguistic and a social perspective.

In Chapter 1, “Fundamental Aspects to Understand the Field of Sociolinguistics” Díaz-Campos focuses on how the way people speak reveals much of their identity. He explains the tasks a sociolinguist undertakes, which include collecting, codifying and analyzing linguistic data. These tasks are shown to facilitate the exemplification of how language is used, and the demonstration of how its use depends on factors such as socioeconomic status, age, gender, ethnicity and education. He also presents the tools used in such tasks and explains how sociolinguists select the focal speech communities they study. Díaz-Campos then discusses the concepts of language variation and linguistic change, examining their linguistic and extralinguistic causes.

Chapter 2, “Language, Age, Gender, and Socioeconomic Status”, discusses important social factors that generate language variation. Change and variation are correlated with certain age groups. An example discussed is the distinction in prestige