ROUTLEDGE

Teaching and Researching Listening

Michael Rost

Third Edition

Applied Linguistics in Action

Teaching and Researching Listening

Now in its third edition, *Teaching and Researching Listening* renews its commitment to provide language educators, practitioners, and researchers in the fields of ESL, TESOL, and Applied Linguistics with a state-of-the-art treatment of the linguistic, psycholinguistic, and pragmatic processes underpinning oral language use. This revised edition incorporates significantly updated sections on neurological processing, pragmatic processing, automated processing, and pragmatic assessment, as well as coverage of emerging areas of interest in L1 and L2 instruction and research. Boxes throughout such as "Concepts" and "Ideas From Practitioners" help to both reinforce readers' understanding of the topics covered and ground them in a practical context. In addition, the updated section "Exploring listening" provides access to a range of tools and technologies to explore new perspectives on listening. Combining detailed overviews of the underlying processes of listening with an exhaustive set of practical resources, this third edition of *Teaching and Researching Listening* serves as an authoritative and comprehensive survey of issues related to teaching and researching oral communication for language teachers, practitioners, and researchers.

Michael Rost is a developer of learning games, software and coursebook series, focusing on products related to English Language Teaching and Research. He is the author of a number of influential books and articles in the fields of language development and curriculum design, beginning with the classic *Listening in Language Learning* (1990).

Applied Linguistics in Action
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Applied Linguistics in Action is a series which focuses on the issues and challenges to teachers and researchers in a range of fields in Applied Linguistics and provides readers and users with the tools they need to carry out their own practice-based research.

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Series Editor Preface

Applied Linguistics in Action, as its name suggests, is a series which focuses on the issues and challenges to teachers and researchers in a range of fields in Applied Linguistics and provides readers and users with the tools they need to carry out their own practice-related research.

The books in the series provide the reader with clear, up-to-date, accessible and authoritative accounts of their chosen field within applied linguistics. Starting from a map of the landscape of the field, each book provides information on its main ideas and concepts, competing issues and unsolved questions. From there, readers can explore a range of practical applications of research into those issues and questions, and then take up the challenge of undertaking their own research, guided by the detailed and explicit research guides provided. Finally, each book has a section which provides a rich array of resources, information sources and further reading, as well as a key to the principal concepts of the field.

Questions the books in this innovative series ask are those familiar to all teachers and researchers, whether very experienced, or new to the fields of applied linguistics.

- What does research tell us, what doesn't it tell us and what should it tell us about the field? How is the field mapped and landscaped? What is its geography?
- How has research been applied and what interesting research possibilities does practice raise? What are the issues we need to explore and explain?
- What are the key researchable topics that practitioners can undertake? How can the research be turned into practical action?
- Where are the important resources that teachers and researchers need? Who has the information? How can it be accessed?

Each book in the series has been carefully designed to be as accessible as possible, with built-in features to enable readers to find what they want quickly and to home in on the key issues and themes that concern them. The structure is to move from practice to theory and back to practice in a cycle of development of understanding of the field in question.

Each of the authors of books in the series is an acknowledged authority, able to bring broad knowledge and experience to engage teachers and researchers in following up their own ideas, working with them to build further on *their* own experience.

The first editions of books in this series have attracted widespread praise for their authorship, their design, and their content, and have been widely used to support practice and research. The success of the series, and the realisation that it needs to stay relevant in a world where new research is being conducted and published at a rapid rate, have prompted the commissioning of this third edition. This new edition has been thoroughly updated, with accounts of research that has appeared since the previous edition and with the addition of other relevant material. We trust that students, teachers and researchers will continue to discover inspiration in these pages to underpin their own investigations.

Chris Candlin
David Hall

Preface

Teaching and Researching Listening is designed to be a reference source and guide for teachers and researchers who have an interest in the role of listening in language education and other areas of applied linguistics. In keeping with the intentions of the Applied Linguistics in Action series, *Teaching and Researching Listening* outlines issues of ongoing relevance to teachers and researchers of both first and second languages and suggests concepts and principles, approaches and resources for exploring these issues.

Readers may use the book as a selective reference, using only those sections that may help clarify their current teaching or research goals. Or, because of the wide range of issues introduced, the book may be used as an exploratory text that may impact the teacher's or researcher's work and interests in a broader sense and provide useful points of departure for further exploration.

M.R.

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Due to the ever-expanding nature of this project on listening, I have had the good fortune of reviewing the work of a number of researchers, language specialists, and teachers. Through correspondence, reading, interviews, conferences, and conversations, I have had the privilege of interacting with many individuals who have made significant contributions to my understanding of listening, teaching, and research. Without their initiative and dedication and their willingness to share their ideas, this present volume would not be possible. In particular, I wish to thank: Todd Beuckens, Graham Bodie, David Brazil, Mike Breen, Gillian Brown, Steve Brown, Gary Buck, Ron Carter, Jeanette Clement, Anne Cutler, Karen Carrier, Wallace Chafe, Craig Chaudron, Rod Ellis, John Field, John Flowerdew, Irene Frankel, Lee Glickstein, Christine Goh, Jill Hadfield, Yo Hamada, Doreen Hamilton, Janice Harrington, Marc Helgesen, Phil Hubbard, Greg Kearsley, Ellen Kisslinger, Michal Kopec, Josh Kurzweil, Cynthia Lennox, Tony Lynch, Dominic Massaro, Kara McBride, Joseph McVeigh, David Mendelsohn, David Nunan, Teresa Pica, Sherry Preiss, Brett Reynolds, Mario Rinvolucri, Jill Robbins, Steve Ross, Joseph Shaules, Beth Sheppard, Leigh Stolle, Eric Tevoedjre, Mary Underwood, Larry Vandergrift, Jef Verschueren, and JJ Wilson.

Although I have tried to do justice to their work in interpreting and synthesizing selected portions of it, I accept responsibility for any misunderstandings, oversimplifications, omissions, or errors.

I also wish to thank my many inspiring students I have been privileged to work with over the years, particularly at Temple University and University of California, Berkeley, and the many participants at my teaching seminars around the world and online. I've benefited greatly from the interaction, and especially from their feedback on many of the ideas and projects in this volume.

I especially wish to express my gratitude to the late Christopher Candlin, series editor and personal guru, for inviting me to undertake this project. Chris was extremely generous in providing me access to his broad knowledge of applied linguistic and sociolinguistic realms and he patiently steered me through the maze of developing this work into a first, second, and now a third edition. Though Chris passed away before this volume reached publication, it is important to acknowledge that he inspired me to make this volume even more penetrating than the previous two editions. I appreciate his assuring me in our final meeting that "Nothing would make me happier" than seeing this third edition in print. It is a testament to Chris's undying sense of grace that he was able to guide me to the very end, to help me achieve things that once seemed so far out of reach.

M.R.

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Introduction

Listening is a topic that has increasing personal relevance to each of us. In an expanding world of instantaneous communication, ubiquitous networking, and immediate transparency, it is ever more important to listen well. Because of the increasing speed of communication, it is becoming more important to know how to decode input accurately, how to filter information, to select what is important, to take multiple meanings into account, and how to understand speakers of differing perspectives even when we may disagree. In short, it is important to keep learning how to listen better, more fully, more compassionately.

Any field that involves clarity and equity of communication involves listening. Simply put, there is no communication without listening. Listening completes communication, and it also amplifies communication and shapes its meaning. As such, listening is inexorably interwoven with numerous areas of academics, entrepreneurship, and government. Listening is now prevalent in applied sciences such as linguistics, education, business, and law, and in social sciences such as anthropology, political science, sociology, and psychology. Just as importantly, the ability to listen well is becoming relevant to natural sciences such as biology and chemistry, neurology and medicine, and to computer sciences and systems sciences.

The escalating relevance of listening, however, does not make it readily knowable or reducible to a simple, learnable formula. Though progress is being made all the time in our understanding of communication processes, between humans, across cultures, and as interfaces with computers, there always seem to be new frontiers out of our immediate reach. Indeed, at a recent Interspeech (http://www.isca-speech.org/) conference on spoken language processing, I heard one of the keynote presenters claim, "Spoken language is the most sophisticated behavior of the most complex organism in the known universe." If language production and comprehension is indeed the most complex system in the known universe, it is not so surprising then that even after decades of study, we still have a long journey ahead.

It is in the spirit of adventure and journey that this work is undertaken.

Outline of *Teaching and Researching Listening*

Section I, **Defining Listening**, as the foundation of the book, introduces the conceptual background of listening by outlining a number of key concepts relevant to the teaching and researching of listening. Section II, **Teaching Listening**, draws upon the concepts in Section I, and incorporates them with principles of instructional design and methods of teaching listening. Section III, **Researching Listening**, is a selected set of research projects involving listening that will lead to direct insights into listening, from sociolinguistic, psycholinguistic, and educational linguistics perspectives. Section IV, **Exploring Listening**, is a single chapter that suggests a range of topics that are not covered in detail in the book, but can be very productive in enriching our understanding of listening.

Section I

Defining Listening

Section Introduction: The Nature of Processing

Listening is a dynamic process with contributions from multiple cognitive operations. This section defines listening in terms of four overlapping types of processing: neurological processing, linguistic processing, semantic processing, and pragmatic processing. A comprehensive understanding of listening needs to account for all four types of processing, indicating how these processes integrate and complement each other.

Chapter 1 describes neurological processing as involving hearing, awareness, consciousness, and attention, and activating a kind of experiential field in which all other processes operate. This initial chapter describes the underlying universal nature of neurological processing and the way it is organized and experienced in all humans, for users of all languages. The chapter also attempts to outline the nature of individual differences in neurological processing, in order to explain the personalized nature of the listening experience.

Chapter 2 describes linguistic processing, the aspect of listening that involves input from a linguistic source—what most language users would consider the fundamental aspect of listening to language. This second chapter begins with analysis of how speech is perceived and proceeds to describe the way in which listeners make sense of sound, through identifying units of spoken language, using prosodic features to group units of speech, parsing speech into grammatical units, and recognizing words as representative of ideas.

Chapter 3 details semantic processing, the aspect of listening that seeks comprehension and integrates memory and prior experience into understanding. This third chapter focuses on comprehension as a functional goal of listening, involving constructing meaning and activating appropriate memory structures that support what is being understood. Chapter 4 focuses on pragmatic processing, that aspect of listening that is embedded in a social and cultural context. While closely related to semantic processing, pragmatic processing centers around the notion of relevance—the idea that listeners take an active role in identifying relevant factors in verbal and non-verbal input and inject their own "agenda" into the process of constructing meaning.

Chapter 5 summarizes listening processing from the perspective of artificial intelligence, outlining the ways that computers "listen" using the same types of linguistic, semantic, and pragmatic processing that humans employ. Chapter 6 serves as a pivotal chapter in the book, delineating the ways that these convergent listening processes are developed, in both first and second language acquisition.

Taken as a whole, Section I provides the kind of "basic research" that will help the reader understand the cognitive processes involved in listening more fully. The concepts explored in Section I will be utilized in the subsequent sections on teaching (Section II) and research (Section III).

1 Neurological Processing

This chapter:

- provides an overview of the neurological network involved in listening;
- describes in detail the processes involved in hearing;
- defines the properties of consciousness that are involved in listening;
- describes attention as the initiation of the listening process.

1.1 Hearing

A natural starting point for an exploration of listening in teaching and research is to consider hearing, the basic physical and neurological systems and processes that are involved in hearing sound. We all experience hearing as if it were a separate sense, a self-contained system that we can turn on or off at will. However, hearing is part of a complex brain network organization that is interdependent with multiple neurological systems (Poeppel & Overath, 2014).

Though hearing cannot be separated from the overall brain network of which it is part, hearing is an identifiable system with an isolable function. **Hearing** is the primary physiological system that allows for reception and conversion of sound waves. Sound waves are experienced as minute pressure pulses and can be measured in **pascals** (Force over an Area: $p = F/A$). The normal threshold for human hearing is about 20 micropascals—equivalent to the sound of a mosquito flying about three meters away from the ear. These converted electrical pulses are transmitted instantaneously from the **outer ear** through the **inner ear** to the **auditory cortex** of the brain. As with other sensory phenomena, auditory sensations are considered to reach **perception** only if they are received and processed by a cortical area in the brain. Although we often think of sensory perception as a passive process, the responses of neurons in the auditory cortex of the brain can be strongly modulated by attention (Barbey & Barsalou, 2009).

Beyond this conversion process of external stimuli to auditory perceptions, hearing is the sense that is often identified with our affective experience of participating in events. Unlike our other primary senses, hearing offers unique observational and monitoring capacities that allow us to perceive life's rhythms and adapt to the "vitality contours" of social events—the affective manner in which social actions are carried out (Rochat, 2013)—as well as of the tempo of human interaction in real time and the "feel" of human contact and communication (Murchie, 1999).

In physiological terms, hearing is a neurological circuitry, part of the vestibular system of the brain, which is responsible for spatial orientation (balance) and temporal orientation (timing), as well as **interoception**, the monitoring of sensate data and perceptual organization of experience from our internal bodily systems (Tang et al., 2012). Hearing also plays an important role in animating the brain, with particular harmonies, frequencies, and rhythms contributing to calming or overstimulated responses in the brain. Of all our senses, hearing may be said to be the most grounded and most essential to awareness because it occurs in real time, in a temporal continuum. Hearing involves continually grouping incoming sound into pulse-like auditory events that span a period of several seconds (Handel, 2006). Sound perception is about always anticipating what is about to be heard—hearing forward—as well as retrospectively organizing what has just been heard—hearing backward—in order to assemble coherent packages of sound (Carriani & Micheyl, 2012).

While hearing provides a basis for listening, it is only a precursor for it. Though the terms **hearing** and **listening** are often used interchangeably in everyday talk, there are essential differences between them. While both hearing and listening are initiated through sound perception, the difference between them is essentially a *degree of intention* (Roth, 2012). **Intention** is known to involve several levels, but initially intention is an acknowledgement of a distal source, a willingness to be influenced by this source, and a desire to understand it to some degree (Kriegel, 2013).

In psychological terms, perception creates a representation of these distal objects by detecting and differentiating properties in the energy field (Poeppel et al., 2012). In the case of **audition**, the energy field is the air surrounding the listener. The listener detects shifts in intensity, which are minute movements in the air, in the form of sound waves, and differentiates their patterns through a fusion of **temporal processing** in the left cortex of the brain and **spectral processing** in the right. The perceiver immediately designates the patterns in the sound waves to previously learned categories of emotion and cognition (Brosch et al., 2010; Mattson, 2014).

The anatomy of hearing is elegant in its efficiency. The human auditory system consists of the outer ear, the middle ear, the inner ear, and the auditory nerves connecting to the brain stem. Several mutually dependent subsystems complete the system (see Figure 1.1).

The outer ear consists of the pinna, the part of the ear we can see, and the ear canal. The intricate funneling patterns of the pinna filter and amplify the incoming sound, in particular the higher frequencies, and allows us the ability to locate the source of the sound.

Sound waves travel down the canal and cause the eardrum to vibrate. These vibrations are passed along through the middle ear, which is a sensitive transformer consisting of three small bones (the ossicles) surrounding a small opening in the skull (the oval window). The major function of the middle ear is to ensure efficient transfer of sounds, which are still in the form of air particles, to the fluids inside the cochlea, where they will be converted to electrical pulses.

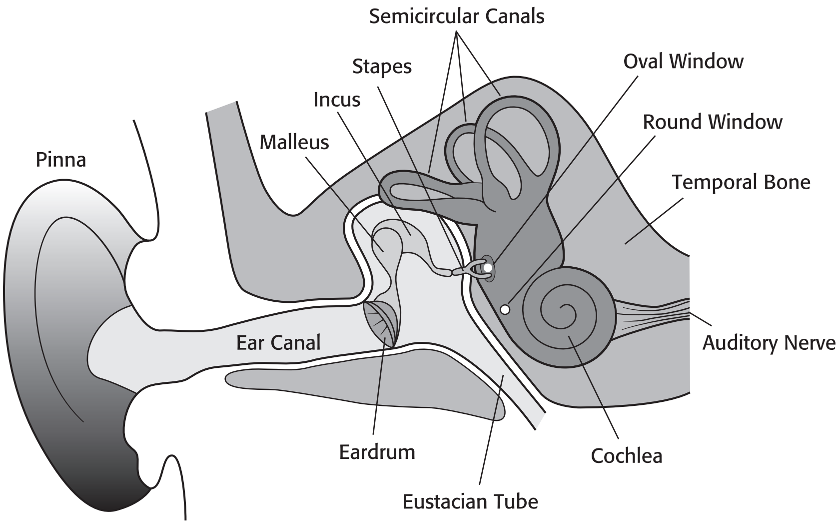

Figure 1.1 The mechanism of hearing. Sound waves travel down the ear canal and cause the eardrum to vibrate. These vibrations are passed along through the middle ear, which is a sensitive transformer consisting of three small bones (malleus, incus, and stapes) surrounding a small opening in the skull (the oval window). The major function of the middle ear is to ensure efficient transfer of sounds, which are still in the form of air particles, to the fluids inside the cochlea (the inner ear), where they will be converted to electrical pulses and passed along the auditory nerve to the auditory cortex in the brain for further processing.

Note. The semicircular canals, which are also part of the inner ear, are used primarily for equilibrium but share the same cranial nerve (the eighth) that the auditory system uses, so hearing and balance are interconnected in the nervous system.

In addition to this transmission function, the middle ear has a vital protective function. The ossicles have tiny muscles that, by contracting reflexively, can reduce the level of sound reaching the inner ear. This reflex action occurs when we are presented with sudden loud sounds such as the thud of a dropped book or the wail of a police siren. This contraction protects the delicate hearing mechanism from damage in the event that the loudness persists. Interestingly, the same reflex action also occurs automatically when we begin to speak. In this way the ossicles' reflex protects us from receiving too much feedback from our own speech and thus becoming distracted by it.

The cochlea is the focal structure of the ear in auditory perception. The cochlea is a small bony structure, about the size of an adult thumbnail, that is narrow at one end and wide at the other. The cochlea is filled with fluid, and its operation is fundamentally a kind of fluid mechanics. The membranes inside in the cochlea respond mechanically to movements of the fluid, a process called **sinusoidal stimulation**. Lower frequency sounds stimulate primarily the narrower end of the membrane, and higher frequencies stimulate only the broader end. Each different sound that passes through the cochlea produces varying patterns of movement in the fluid and the membrane.

At the side of the cochlea, nearest the brain stem, are thousands of tiny hair cells, with ends both inside and outside the cochlea. The outer hair cells are connected to the auditory nerve fibers, which lead to the auditory cortex of the brain. These hair cells respond to minute movements of the fluid in the membrane and **transduce** the mechanical movements of the fluid into nerve activity.

As with other neural networks in the human brain, our auditory nerves have evolved to a high degree of specialization. There are five different types of auditory nerve cells. Each auditory neuron has different **Characteristic Frequencies (CF)** to which they respond continuously throughout the stimulus presentation. Neurons with high CFs are found in the periphery of the nerve bundle, and there is an orderly decrease in CF toward the center of the nerve bundle. This **tonotopic organization** preserves the frequency spectrum as it passes along the signal pulses, which is necessary for speedy, accurate processing of sound (Plack, 2014). Responding to their specialized frequencies, these nerves actually create tuning curves that correspond to the actual shape of their cell and pass along very precise information about sound frequency to the **superior olivary complex** of the central auditory nervous system. This is considered the first area in the "connectome", or network map of the brain, at which sound from both ears converge (Mendoza, 2011).

The distribution of the neural activity is called the **excitation pattern**, which is a pattern of up-and-down motions of the tiny cilia in the basilar membrane. This excitation pattern is the mechanical output of the hearing process. For instance, if you hear a specific sequence of sounds, such as /a/+/i/+/l/+/a/+ /i/+/k/, there is a specific excitation pattern produced in response that is precisely the same in all hearing humans. While the excitation patterns may be identical physiologically, how the hearer interprets the signal and subsequently responds to it is, of course, subject to a wide range of contextual differences, such as time, place, and number of other participants, co-textual differences, which are the other pieces of language presented in juxtaposition to it, and individual listener differences, including age, gender, culture, and language background (Andrigna et al., 2012).

These differences virtually ensure that not everyone registers the same thing in any given setting, even though the excitation pattern for a particular stimulus may be neurologically identical in all hearers. On a physical level, the difference in our perception is due to the fact that the individual **neurones** that make up the auditory nerve fibers are interactive—they are affected by the action of all the other neurones with which they interact. Sometimes, the activity of one neurone is suppressed or amplified by the introduction of a second tone. In addition, since these nerves are physical structures, they are affected by our general health and level of arousal or fatigue. Another condition that interferes with consistent and reliable hearing is that auditory nerves, which are intertwined with the **vestibular nerve** regulating balance, sometimes fire involuntarily when no hearing stimulus is present (Wu et al., 2014).

The physiological circuitry of listening begins when the **auditory cortex** is stimulated. The primary auditory cortex is a small area located in the **temporal**

lobe of the brain. It lies in the back half of the Superior Temporal Gyrus (STG) and also enters into the transverse temporal gyri (also called Heschl's gyri). This is the first brain structure to process incoming auditory information. Anatomically, the **transverse temporal gyri** are different from all other temporal lobe gyri in that they run mediolaterally (towards the center of the brain) rather than dorsiventrally (front to back).

As soon as information reaches the auditory cortex, it is relayed to several other neural centers in the brain, including **Wernicke's area**, which is responsible for speech recognition and lexical and syntactic comprehension, and **Broca's area**, which is involved in calculation and responses to language-related tasks.

Imaging studies have shown that many other brain areas are involved in language comprehension as well (see Figure 1.2). This neurological finding is

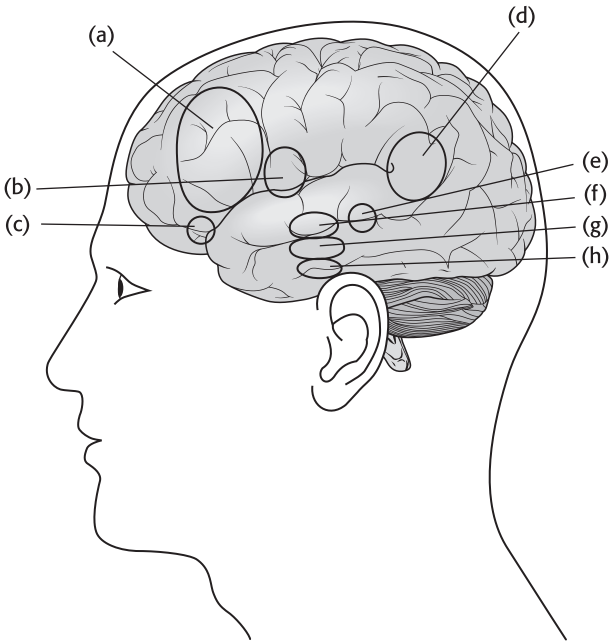

Figure 1.2 Primary areas of the brain involved in listening. Several areas of the brain are involved in listening, most of them in the left hemisphere. (*a*) The left prefrontal cortex is involved in processing information during speech comprehension. (*b*) The left pars triangularis is involved in syntactic processing. (*c*) The left pars orbitalis is involved in semantic processing of lexical items; the right pars orbitalis (in the right hemisphere of the brain) is involved in semantic processing of discourse. (*d*) The left superior temporal sulcus (STS) is involved in phonetic processing of sounds; the right STS is involved in processing prosody. (*e*) The left plenum temporale is involved in speech–motor interface. (*f*) The primary auditory cortex is involved in speech perception. (*g*) The secondary auditory cortex (which wraps around the primary auditory cortex) is involved in the processing of intonation and rhythm. (*h*) The left superior temporal gyrus (STG) is involved in semantic processing of lexical items; the right STG is involved in semantic processing at the discourse level.

consistent with language processing research indicating simultaneous **parallel processing** of different aspects of information (Bullmore & Sporns, 2012; Friederici, 2011)

These studies have shown that all of these areas are involved in aural language comprehension in a cyclical fashion, with certain areas more active while processing particularly complex sentences or disambiguating particularly vague references. Impairments in any one area, often defined as an **aphasia** (if acquired by way of an injury or aging process), can result in difficulties with lexical comprehension, syntactic processing, global processing of meaning, and formulation of an appropriate response (Vitello, 2014).

1.2 Consciousness

As we map out the processes that underlie listening, we realize that a complex neural architecture underlies our ability to perceive and understand the language. The most general assumption of this kind of neurological map is that knowledge derives from perceptual, behavioral, and affective experiences of the world. We internalize these experiences in multi-modal ways: how they feel, how they look, how they sound, and what language is associated with them. We are then able to deconstruct these multi-modal experiences into structural, functional, and verbal models so that we can utilize these learned experiences more efficiently (Paivio, 2013). While the extent of this epistemologically based knowledge we use in cognition is immeasurably large, it is only part of the vast knowledge that we as humans are able to access through the mind. We have additional ways of experiencing the world as well which are not directly stimulated by perception.

We are able to "listen" without direct stimulation of the auditory system because listening is not, as we have outlined, based solely on sensory-perceptual skills, nor is it based only on what comes through the hearing mechanism. The Central Auditory Nervous System (CANS) is a complex system with multiple components. Anatomically, the auditory system includes nuclei and pathways to all parts of the brain: the brainstem, the subcortex, some areas of the cortex, and the corpus callosum. In this sense, much of what constitutes central auditory processing is pre-conscious, that is, it occurs outside of a listener's awareness of what is being listened to. What is experienced by the listener is a complex perceptual event, one that is influenced by multiple systems.

In addition to the knowledge gained from experiencing an *external* auditory-based event, our listening is also informed by ontological knowledge, or knowledge based on experience of our *internal* reality (Lorenz, 2010). The bridge between these two sources of knowledge is most often called **consciousness** (Chafe, 2014). As a bridge across different sources of knowledge, consciousness is a process that *initiates* attention, memory, and learning, and ultimately meaning construction (Kayser et al., 2012).

Just as we characterized sound perception as a neurophysical process initiated by an energy pattern in air, we may think of consciousness in a similar way.

Consciousness has been described as a confluence of energy sources, emerging when two cognitive processes coincide: (1) The brain (particularly, the thalamic nucleus, which coordinates and redirects all sensory signals) identifies an outside object or event as consisting of independent properties; and (2) the brain sets up the listener as the central agent who willingly and purposefully witnesses this object or event. Consciousness is the phenomenon of experiencing this integration as a *subjective* phenomenon (Manzotti & Chella, 2014; Shulman, 2013). Beyond this characterization of subjective experience, it has been said that consciousness is a neurophysiological "motivating mechanism" that allows a person to become active and goal-directed in both internal and external environments (Csikszentmihalyi et al., 2014). In this light, consciousness is experienced as a continuous force that links contact with the internal and external environments and allows the experiencer to make sense of these encounters and to direct them.

For the purposes of describing listening, the concept of consciousness is important because it helps to define the notion of **context**. Consciousness involves the **activation** of portions of *the listener's model* of the surrounding world—a model that is necessarily self-referenced. The portions of this model that are activated are those that are involved in understanding the current encounter, including whatever input (language, sounds, images, movements) is associated with it. This means that context is constructed from the overlap of the perceptual contact with the external event (**external context**) and from the listener's subjective experience (**internal context**) at the time of contact.

The concept of consciousness is important for communication—visual, aural, and kinesic—because *some* force must direct the individual's attention to the external world. For the speaker, consciousness influences what aspects of the person's experience he or she intends to communicate, the intention that precedes the signaling and displaying levels of communication. For the listener, consciousness guides the receiver's attempts to experience the speaker's world in some manner and to construct meaning from this experience (Sanz et al., 2012).

Concept 1.1 The Properties of Consciousness

There are five properties of consciousness that affect listening.

- Consciousness is *embedded* in a surrounding area of peripheral awareness. The active focus is surrounded by a periphery of semi-active information that provides a **context** for listening.
- Consciousness is *dynamic*. The focus of consciousness moves constantly from one focus, or item of information, to the next. This movement of consciousness is experienced by the listener as a continuous event, rather than as a discrete series of mental snapshots.

- Consciousness has a *point of view*. The listener's model of the world is necessarily centered on a "self". The location and needs of that self establish a point of view, which is a constant ingredient of consciousness and a guide for the selection of subsequent movements of attention.
- Consciousness has a need for *orientation*. The listener's peripheral awareness must include information about the location in space, time, and ongoing activity. This orientation allows consciousness to shift from an **immediate mode**, in which the person is attending to present, tangible items (persons, places, things) and references, to a **distal mode**, in which the person is attending to abstract or imaginary references and concepts.
- Consciousness can *focus* on only one thing at a time. The limited capacity of consciousness is reflected as a linguistic constraint: A speaker can produce only one focus of consciousness at a time, which is reflected in brief spurts of language, called **intonation units**.

Sources. Based on Block (2011); Chafe (2000); Meuwese et al. (2013).

1.3 Attention

Attention is the operational aspect of consciousness and can be discussed more concretely. Attention has identifiable physical correlates: specific areas of the brain that are activated—achieve a "neural gain"—in response to a decision to attend to a particular source or aspect of input (Eldar et al. 2013). Attention is the focusing of consciousness on an object or train of thought, which activates parts of the cortex that are equipped to process it (see Figure 1.3).

Because of the deliberate nature of attention, we can consider attention to be the beginning of **involvement** (Fiske & Taylor, 2013). For the purposes of this study, involvement is the essential differentiation between hearing and listening: Listening requires intentional involvement, while hearing does not.

Quote 1.1 William James on Attention

> Everyone knows what attention is. It is the taking possession of the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought. *Focalization and concentration of consciousness* are of its essences. It implies withdrawal from some things in order to deal effectively with others.
>
> William James (1890/1950: 405), considered one of the founders of modern psychology